

PROJECT MANUAL PERMIT / GMP SET

April 30, 2021

BROADVIEW SENIOR LIVING AT PURCHASE COLLEGE INDEPENDENT LIVING, ASSISTED LIVING/ MEMORY CARE, & COMMONS VOLUME 1: DIVISIONS 00 THROUGH 14



HCM DESIGN, INC

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HCM Project No.: 215042.00

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Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

PROCUREMENT AND CONTRACTING DOCUMENTS GROUP

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PROJECT TITLE PAGE

1.1 PROJECT MANUAL

- A. Project Name: Broadview Senior Living at Purchase College - Independent Living, Assisted Living & Memory Care, & Commons.
- B. Owner: Purchase College Advancement Corporation.
- C. Project Address: 735 Anderson Hill Road, Purchase, New York 10577.
- D. Architect's Project No.: 215042.00.
- E. Architect: HCM Design, Inc.
- F. Architect's Address: 700 E. Pratt Street, Suite 1200, Baltimore, MD 21202.
- G. Architect's Phone No.: 410-837-7311.
- H. Architect's Website: www.hcm2.com.
- I. Issued: April 30, 2021.
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GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.
- B. Because subsurface conditions indicated by the soil borings are a sampling in relation to the entire construction area, and for other reasons, the Owner, the Architect, the Architect's consultants, and the firm reporting the subsurface conditions do not warranty the conditions below the depths of the borings or that the strata logged from the borings are necessarily typical of the entire site. Any party using the information described in the soil borings and geotechnical report shall accept full responsibility for its use.
- C. A Geotechnical Investigation and Report for Project, prepared by SESI Consulting Engineers, dated July 18, 2018, is appended to this Document.
 - 1. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
 - 2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.

END OF DOCUMENT 00 31 32

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SESI

CONSULTING
ENGINEERS

Geotechnical
Foundations
Land Planning
Geo-Structural
Environmental
Water Resources

July 18, 2018 *via email:*
jschwalbe@divneytungschwalbe.com

Mr. Jerry Schwalbe
Divney-Tung Schwlabe
One North Broadway
White Plains, NY 10601

RE: **Geotechnical Investigation and Report
Proposed SLC Purchase
Purchase, New York
SESI Project No. 9065**

Principals:

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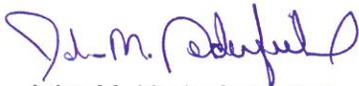
Dear Mr. Schwalbe:

In accordance with our Professional Services Agreement dated May 2, 2018, we have completed our geotechnical investigation for the above referenced project. This report contains a description of our investigation, an evaluation of the subsurface soil and groundwater characteristics, and presents recommendations for general site preparation procedures and foundation design criteria for the proposed construction.

If you have any questions, please call.

Sincerely,

SESI CONSULTING ENGINEERS D.P.C.



John M. Nederfield, P.E.
Vice President

Encl: Geotechnical Investigation Report Dated July 18, 2018

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GEOTECHNICAL INVESTIGATION AND REPORT

**Proposed SLC Purchase
Brigid Flanagan Drive
Purchase, Westchester County, New York**

Prepared For:

**DIVNEY-TUNG SCHWALBE
One North Broadway
White Plains, NY10601**

Prepared By:

**SESI CONSULTING ENGINEERS D.P.C.
12A Maple Avenue
Pine Brook, NJ 07058**

Project No.: 9065

July 18, 2018



INTRODUCTION AND PROPOSED CONSTRUCTION

SESI has completed our geotechnical investigation for the proposed development to be located on Brigid Flanigan Drive in Purchase, New York. The site is bounded by Brigid Flanigan Drive to the west and south, Lincoln Avenue to the east, and SUNY at Purchase College to the north. The site currently consists of wooded areas, lawn areas, wetland areas and a landfill area. The landfill area separates the development areas. A residential development will be located to the south of an existing landfill and is currently wooded with some wetlands. The independent living buildings, assisted care building and Commons building will be located to the north of the existing landfill and is currently wooded with some open grassed areas. Other areas were also investigated for utility and roadway improvements.

We understand the proposed construction will consist of a 33 building (20 single family, and 13 duplex) residential development to be known as Broadview at Purchase College, two 5-story Independent Living buildings (over garage), a 2-story Commons building (no basement) and a 3-story Assisted Living/Memory Care building at Purchase with associated roadways and parking areas.

Based on our field observations and the topographic information provided on the plan prepared by Divney Tung Schwalbe, LLP undated, the topography of the southern portion of the site appears to be gently sloping downwards from north to south from a high elevation (EL) 300 to a low elevation of EL 278. The topography of the northern portion of the site appears to be gently sloping downwards from north to south from a high EL 336 to a low EL 305.

We have not been provided with the proposed grading plans; however, based on cut/fill plans provided by Divney Tung Schwalbe, we anticipate that cuts up to 7± feet will be required in the northern portion of the site and cuts of up to 2± feet and fills of up to 5± feet will be required in the southern portion of the site. We have not been provided with the proposed wall, column or floor loads, but have assumed moderate to heavy loadings for the structures on the northern site and relatively light loads on the southern site. Once the final site grading plans and foundation plans have been developed, we should be provided the opportunity to review them to confirm that our recommendations remain valid.

FIELD AND LABORATORY INVESTIGATIONS

Our engineering study consisted of a site reconnaissance, a review of existing soils and geologic data, and a field investigation consisting of the drilling of thirty-one (31) soil borings and the excavation of nineteen (19) test pits. The borings were drilled from June 7, 2018 through June 18, 2018 to depths of 9 to 26± feet below the ground surface using a subcontracted ATV-mounted drill rig and a truck-mounted drill rig. The test pits were excavated from June 5, 2018 through June 7, 2018 to depths of 6 to 16± feet below the ground surface using a subcontracted track excavator. Ground surface elevations were interpolated from the plan prepared by Divney Tung Schwalbe, LLP undated.

The locations of the borings and test pits are shown on the *Boring and Test Pit Location Plan*, which are included as *Figures 1A and 1B*. Individual soil logs, which describe the materials encountered, are presented as *Figures 2 through 51*. A key to soil terminology

is included as *Figure 52*. Test pit logs previously done by SESI in the vicinity of the proposed construction are provided in the *Appendix*.

Soil samples suitable for identification purposes were extracted from the borings at closely spaced intervals in accordance with the procedures of the Standard Penetration Test (ASTM D1586). For this test, a standard split-spoon sampler (2 inches outside diameter; one and three-eighths inches inside diameter) is driven into the soil by a 140-pound weight falling 30 inches. After discounting the initial six inches of penetration due to possible disturbance of the material resulting from the drilling operation, the number of blows required to drive the sampler a distance of 12 inches is recorded and designated as the standard penetration resistance or "N value". The "N value" provides an indication of the relative compactness of the soil in-situ. Soil samples suitable for identification purposes were extracted from the test pits at various intervals.

All fieldwork was performed under the full time technical observation of an engineer from SESI Consulting Engineers D.P.C.. Our representative maintained continuous logs of the explorations as work proceeded and coordinated the soil sampling operations in order to develop the required subsurface information. Boring and test pit locations were staked in the field by your surveyors.

All soil samples were taken to our soils laboratory for classification and appropriate geotechnical testing. Laboratory testing consisted of five (5) mechanical grain size analyses, seven (7) percent passing sieve No. 200 tests, and twelve (12) water content determinations. The results of the percent passing sieve No. 200 tests and water content determinations are presented on the individual boring logs. The results of the mechanical grain size analyses are presented on the individual boring logs and in graphical form as *Figures 53 through 57*.

GENERALIZED SUBSURFACE CONDITIONS

According to the United States Geological Survey, the site soils are geologically mapped as till overlying bedrock. The bedrock is mapped as mica schist and mica gneiss.

The site soils are in general agreement with the geologic mapping. The generalized subsurface conditions encountered at the site in order of increasing depth consist of:

Surface Materials: Topsoil was encountered in most of the borings and test pits with depths ranging from 6 inches to 2 feet, with typical thicknesses ranging from 6 to 12 inches. Boring I1 was drilled in the roadway and encountered 1 inch of asphalt.

Fill: Fill was encountered below the surface materials in test pits I6, V13 and V14 and in borings IE4 and IW1 to depths ranging from 9 to 13± feet below the ground surface. Test pit V13 did not penetrate the fill layer to a depth of 9 feet. Heavy seepage into the excavation prevented continuation of the test pit. It should be noted that test pit I6 was excavated near an old stone foundation from a previous building; IE4 was drilled near a fenced enclosure and test pits V13 and V14 were excavated adjacent to the landfill. The fill typically consists of sand, silt, and gravel with wood, metal, plastic, fabric, concrete, and brick. Fill thicknesses may vary from the depths shown on the logs.

Natural Soils: Beneath the existing fill (where encountered) and the topsoil are the natural soil deposits consisting primarily of brown medium to fine sand with varying amounts of clay/silt and gravel with cobbles and boulders and/or clay silt/silty clay with varying amounts of sand and gravel with cobbles and boulders. Based on the blow counts obtained from the borings, the soils can be classified as medium dense to very dense for the granular soil and medium stiff to hard condition for the fine-grained soils.

Boulders/Bedrock: Split spoon refusal and auger refusal was encountered in all five borings drilled in the southern development area at depths ranging from 15 to 20± feet below the ground surface and in five borings drilled in the northern development area at depths ranging from 17 to 18.5± feet below the ground surface. The remaining borings did not encounter the bedrock to the completion depth of the borings. We were typically able to auger into the upper portion of the bedrock which is an indication that the upper portion is weathered. It should be anticipated that some of the auger refusals at shallow depths may be on boulders as adjacent borings were able to continue deeper (such as boring I9); however, the bedrock may also be pinnacled.

Groundwater: Groundwater was encountered in eleven of the test pits and twenty-one of the borings at depths ranging from 8 to 18± feet below the ground surface during the short period of time that the holes were left open. It should be anticipated that groundwater will fluctuate depending on the time of year and amount of recent precipitation. It should be noted that some of the upper soils were mottled especially near the wetland areas.

EVALUATION AND RECOMMENDATIONS

The recommended site preparation and building support considerations discussed in this report are based primarily on geotechnical engineering considerations. Our geotechnical design considerations may require modifications to address environmental and/or legal considerations. This may include handling/disposal of fill materials related to the landfill and/or pumping of groundwater.

General

From a soils and foundation support standpoint, this site can be considered good with respect to providing satisfactory support of the planned buildings. Fill was only encountered in two of the borings (IE4 and IW1) drilled within the proposed building footprints and in three test pits (I6, V13, and V14) excavated within proposed utility areas and roads during our investigation. The natural glacial soils found beneath the surface material and uncontrolled fill, where encountered, will provide suitable support for conventional shallow foundations with moderate allowable bearing capacities. It should be anticipated that fill may be encountered in other areas on the site from previous construction activities. The primary negative aspects of the subsurface conditions are the high silt/clay content of some of the site soils, which makes these materials highly moisture sensitive and difficult to work with in wet weather and the relatively shallow depths to groundwater in some areas, especially adjacent to the wetlands. These soils also deteriorate rapidly when exposed to the weather and may require drying or treatment prior to their reuse. They may also be over optimum water content in the natural state and require drying prior to their reuse.

Building Preparation Procedures

In general, the site preparation procedures should consist of clearing and stripping the surface vegetation, removing site improvements, building foundations, etc. from within the building areas and five feet beyond the building lines, removing and replacing the uncontrolled fill (where encountered), and then cutting and filling the site to grade. Prior to placing any fill material on the site, the entire area should be proofrolled with a heavy vibratory roller (minimum 10-ton static drum weight) under the observation of a qualified geotechnical engineer. The proofrolling should consist of making a minimum of 4 complete coverages of the area. Any soft areas disclosed during the proofrolling should be excavated to stable material and backfilled in compacted lifts to achieve 95 percent of Modified Proctor density (ASTM D 1557).

All footings must be founded on the natural soils or on a controlled compacted fill after removing the existing fill soils. Should any footings require over-excavation of uncontrolled fill to reach the natural soils, the excavation should be widened a minimum of 6 inches beyond the edge of the footings for every foot of over-excavation (e.g. for 4 feet of over-excavation, the excavation should be an additional 2 feet beyond all sides of the footing). Once the bottom of the excavation has been achieved, the subgrade should be proofrolled prior to placing any new fill. The proofrolling should consist of a minimum 4 complete passes with a vibratory roller (e.g. double drum sheepsfoot roller) under full-time engineering observation. Any soft areas disclosed during the proofrolling should be excavated to stable material and backfilled with a suitable granular material, obtained either from on-site or off-site sources, and be placed in compacted lifts to achieve 95 percent of Modified Proctor density (ASTM D 1557).

The inorganic cut soils may be used to fill other areas of the site; however, because some of these materials possess a high silt content, they will be difficult to compact when significantly over optimum water content and, once wet, will require a long period of time to dry. The ease with which soil fills can be constructed on this site will, to a high degree, depend on the time of year in which construction takes place and the construction procedures utilized by the earthwork contractor. Wetting or drying of the fill soils may be required prior to their reuse. These soils can also be treated with lime/cement in order to achieve the required moisture contents and densities.

Off-site borrow material, if required, should have a maximum particle size of 6 inches and the maximum amount of fines (percentage passing a No. 200 mesh sieve) should be 15% to help facilitate construction during wet weather. The "fines" should be non-plastic.

The thickness of individual lifts of fill should be limited to 12 inches. The fill should be compacted using a large vibratory roller (minimum 10-ton static drum weight) to achieve a minimum dry density of 92 with an average of greater than 95 percent of the Modified Proctor density (ASTM D 1557). Wetting or drying of the fill material should be accomplished as necessary to achieve the required density.

Backfill in confined areas such as utility trenches and foundations within load bearing or paved areas should be placed in maximum 6-inch thick layers and compacted to a minimum of 92 percent and average of greater than 95 percent density as described above.

Areas, which will not have any foundations or other structural loads, may be compacted to a minimum of 90 percent of the maximum Modified Proctor density (ASTM D 1557).

As previously indicated, some of the subsurface onsite soils contain significant percentages of silt/clay and will readily soften during wet weather and from construction activity. Wetting or drying of the fill material should be accomplished as necessary to achieve the required density. The subgrade should be graded to drain and tight-rolled at the end of the day, if wet weather is anticipated.

If stormwater seepage or groundwater is encountered during construction, gravel filled sumps with pumps should be installed below the subgrade elevation to allow for dewatering of the excavation. The site should be graded to prevent stormwater from flowing into the excavations.

Slopes and Excavations

Permanent soil cut and fill slopes should be limited to a maximum of 2 horizontal to 1 vertical for slopes up to 15 feet high and 2.5 horizontal to 1 vertical for slopes greater than 15 feet high and be evaluated by a qualified geotechnical engineer.

All temporary excavations greater than 4 feet in depth should have the sides sloped back or be appropriately sheeted and braced in accordance with OSHA and all applicable codes and be evaluated by a qualified Geotechnical Engineer.

Utility Lines

The natural inorganic site soils or controlled compacted fill will provide suitable support for the utility lines. Cobbles greater than 4 inches in diameter should be removed from the utility line subgrade or a minimum 4-inch thick sand layer placed beneath the utility lines. If utility lines fall within soft soils, the excavation should be extended an additional 12 inches and replaced with 3/4-inch clean crushed stone or clean sand and gravel.

Backfill material placed around utility lines to 6 inches above the utility line should have a maximum particle size of 1.5 inches. Backfill of utility trenches that fall within load bearing areas should be placed in maximum 6-inch thick lifts and compacted to the same density requirements as in the building/parking areas. Trench backfill in non-load bearing areas should be compacted to 90 percent of Modified Proctor density (ASTM D-1557).

Retaining Walls

The retaining wall subgrade should be excavated to a dense and stable subgrade and proof rolled with a vibratory roller under full-time engineering observation. The retaining wall foundation and backfill material should be placed in accordance with the design specifications. Retaining wall backfill should consist of a free-draining granular material with less than 15 percent non-plastic fines. The maximum particle size for the retaining wall backfill should be 3 inches or as specified by the design engineer. Retaining wall backfill should be placed in maximum 8-inch lifts and compacted with hand-operated compactors to achieve 95 percent of the Modified Proctor density (ASTM D1557).

All retaining walls should be provided with positive drainage behind the wall to preclude hydrostatic pressures from developing.

FOUNDATION DESIGN CRITERIA

After satisfactory completion of the building area preparation procedures described above, spread/strip footings and a slab-on-grade floor system may be constructed within the compacted fill or on the natural soils. The footings may be designed for a maximum net allowable soil bearing pressure of 2.0 tsf (4,000 psf).

Regardless of the loads, the minimum plan dimension of isolated footings should be 36 inches and the minimum width of continuous footings should be 24 inches. Exterior footings and those footings potentially exposed to frost action should be founded a minimum of 3.5 feet below adjacent exterior grade or as required by the local building code. Interior footings within heated building areas may be founded at conventional depths below the floor slab.

Because the majority of the site soils are moisture sensitive, they will readily degrade under construction traffic and if left open to the weather. Excavations should therefore be left open for as short a time as practical to avoid excessive disturbance to the exposed subgrade. The bottom of the footing excavations should be compacted with a hand-operated compactor under engineering inspection. Should the bottom of an excavation become softened during construction, the soft material should be excavated and replaced with clean ¾-inch crushed stone. We recommend that all footings be over-excavated a minimum of 6 inches and place a minimum of 6 inches of ¾-inch clean crushed stone. The stone will provide a stable working mat and a medium through which to pump stormwater runoff. If water is encountered, it should be controlled locally with gravel filled sumps.

All below grade walls should be provided with positive drainage behind the wall to preclude hydrostatic pressures from developing. All site retaining walls should also be provided with positive drainage or be designed for hydrostatic pressures.

The floor slab should be designed using a subgrade modulus of 175 pci, assuming that a 6-inch thick layer of granular material with a maximum particle size of 1.5 inches and a maximum percent passing the No. 200 mesh sieve of 12 percent is placed beneath the floor slab, and may be constructed as a slab-on-grade on the compacted fill.

To prevent dampness in the lowest level of the buildings, all below grade walls should be damp-proofed and a moisture/vapor barrier be placed on the underside of the lowest level slab-on-grade. A drainage board (MiraDrain) or stone backfill should be placed along the foundation wall to allow any groundwater to flow down to the footing drains.

Foundation drains are required for any retaining walls below grade and should be tied to the storm sewer system or to a sump with pump.

Seismic Design

The site soils have been classified as Site Class D for seismic design purposes in accordance with the 2015 International Building Code.

Based on a structural occupancy/risk category of I/II/III and information provided by the USGS: U.S. Seismic Design Maps, the following seismic design criteria should be used for this project:

Mapped Spectral Response Acceleration for Short Periods	$S_S = 0.266g$
Mapped Spectral Response Acceleration for 1-Second Period	$S_1 = 0.071g$
Site Coefficient	$F_a = 1.587$
Site Coefficient	$F_v = 2.400$
Spectral Response for short periods	$S_{MS} = 0.422g$
Spectral Response for 1 second period	$S_{M1} = 0.170g$
Design Spectral Response Acceleration for Short Periods	$S_{DS} = 0.281g$
Design Spectral Response Accelerations for 1-Second Period	$S_{D1} = 0.114g$

After satisfactory completion of the outlined building area preparation procedures, footings and floor slabs founded on the compacted structural fill/natural soils should have post-construction total settlements of less than 3/4-inch and maximum differential settlements in a 30 foot span of less than 1/2-inch.

A summary of soil design parameters is provided in the attached Table 1.

TESTING REQUIREMENTS

During the placement of all fill, visual observations and in place density tests should be performed to determine the adequacy of the fill. Density testing should be done in accordance with the following minimum frequency requirements or as determined by the geotechnical engineer:

Building Areas: Minimum of 4 tests per 12-inch lift; spacing not to exceed 50 feet between test locations.

Parking/Roadway Areas: Minimum of 3 tests per 12-inch lift; spacing not to exceed 100 feet between test locations.

Minimum density requirements are outlined in the previous sections of this report.

PARKING/ROADWAY AREA PREPARATION PROCEDURE

After stripping the vegetation and topsoil, the parking lot/roadway area subgrade should be proofrolled using a heavy vibratory compactor (minimum 10-ton static drum weight). The compaction should consist of making 4 complete coverages of the area. If any soft areas are encountered during the compacting/proofrolling, they should be excavated to stable material and replaced with a controlled compacted fill. The compaction/proofrolling should be inspected by a qualified soils engineer prior to placing any compacted fill.

Upon completion of the stripping/excavation/proofrolling operations, the fill required to attain finished subgrade elevation should be placed in lifts and compacted with the same or similar compactor as that used for the proofrolling. The fill materials may be obtained from the existing inorganic onsite soils or from offsite borrow.

If offsite borrow material is required, it should have a maximum particle size of 6 inches and the maximum amount of fines (percentages passing a No. 200 mesh sieve) should

be 15% to help facilitate construction during wet weather. The "fines" should be non-plastic.

The thickness of individual lifts of soil fill should be limited to 12 inches. The fill should be compacted using a large vibratory roller to achieve a minimum dry density of 92 percent and an average density of greater than 95 percent of Modified Proctor density as determined from laboratory test ASTM D 1557, except in the upper 2 feet where a minimum of 95 percent should be achieved.

Wetting or drying of the fill material should be accomplished as necessary to achieve the required density.

PAVEMENT DESIGN CRITERIA

We estimate that the subgrade soils will have a CBR value (California Bearing Ratio) on the order of 8 to 10 percent. We should inspect the pavement subgrade prior to the placement of the pavement section in order to determine if it is in accordance with our estimated design criteria. The subgrade soils should be compacted at ± 2 percent of optimum moisture to 95 percent of Modified Proctor density (ASTM D 1557).

INSPECTION

The recommendations presented in this report are based on the assumption that the site preparation procedures will be done under engineering inspection. SESI should provide full-time inspection of the over-excavation, the proofrolling operations, the placement of the compacted fill, and the bottom of the footing excavations prior to the placement of concrete and/or stone. Visual observations and in-place density testing should be done throughout fill construction to determine that the work is done in accordance with our recommendations.

LIMITATIONS

The subsurface investigation performed identifies the subsurface conditions only at the locations of the test holes and at the depths where the samples were taken. SESI Consulting Engineers D.P.C. reviews the published geologic data and the field and laboratory data and uses their professional judgment and experience to render an opinion on the subsurface conditions throughout the site. Because the actual subsurface conditions may differ, we recommend that SESI be retained to provide construction inspection in order to minimize the risks associated with unanticipated conditions.

This report should not be used:

1. When the nature of the proposed buildings are changed;
2. When the size or configuration of the proposed buildings are altered;
3. When the location or orientation of the proposed buildings are modified;
4. When there is a change in ownership; or
5. For application to an adjacent or any other site.

SESI shall not accept any responsibility for problems, which may occur if SESI is not consulted when there are changes to the factors considered in this report's development.

The soil logs should not be separated from the Engineering Report in order to minimize the possibility of soil log misinterpretation.

DISCLAIMER

This Report was prepared by SESI for the sole and exclusive use of Divney-Tung Schwabe. Nothing under the Professional Services Agreement between SESI and its client, Divney-Tung Schwabe, shall be constructed to give any rights or benefits to anyone other than Client and SESI, and all duties and responsibilities undertaken pursuant to the Agreement will be for the sole and exclusive benefit of Client and SESI and not for the benefit of any other party. This Report has been prepared and issued subject to the express condition that same is not to be disseminated to anyone other than Client, without the advance written consent of SESI (which SESI, in its sole discretion, is free to grant or withhold). Use of the Report by any other person is unauthorized and such use is at the sole risk of the user.

jn9065geotechrpt07182018

TABLE I

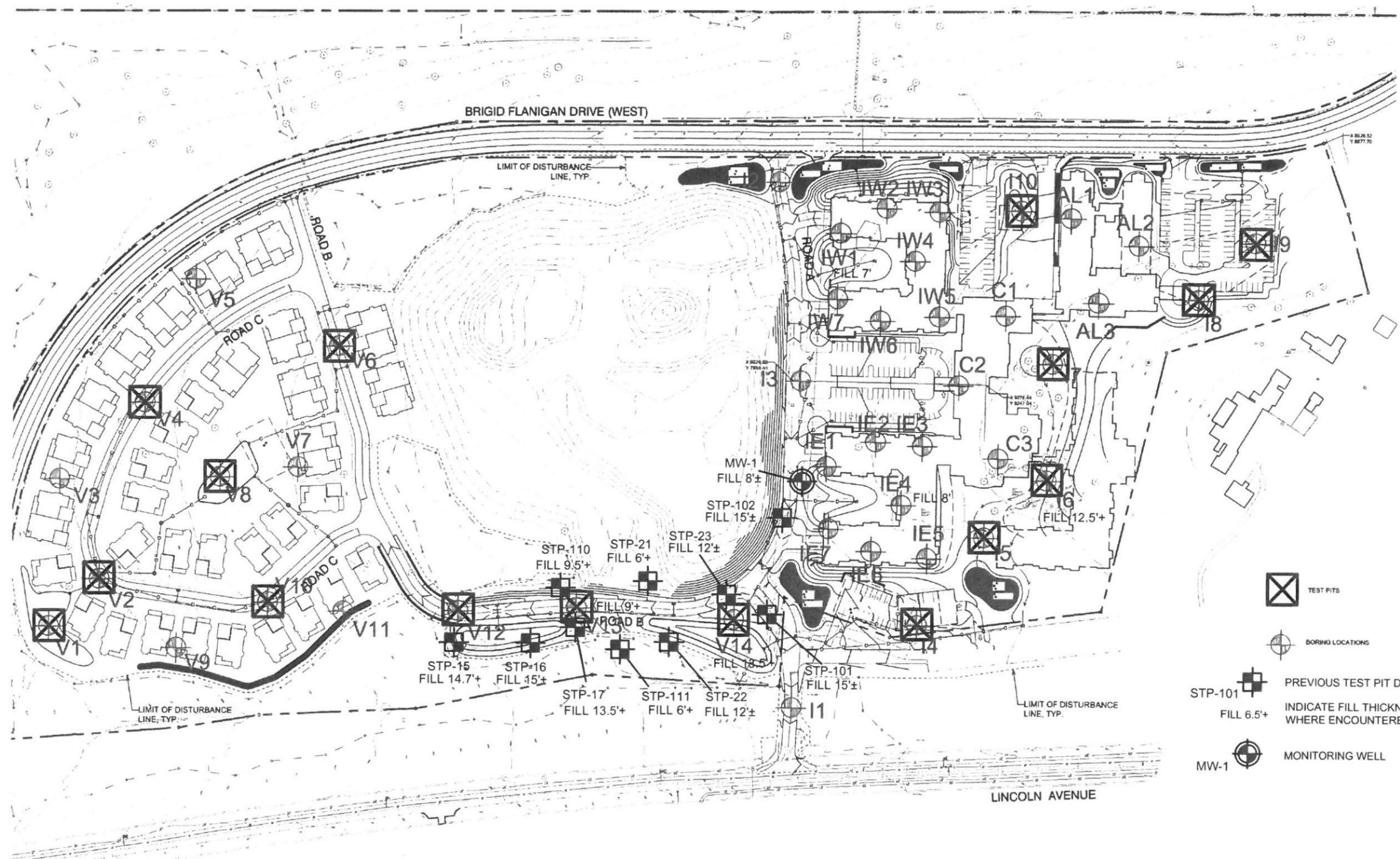
SUMMARY OF SOIL DESIGN PARAMETERS

	PARAMETER	VALUE
1.	Allowable Bearing Capacity (net)	4,000 psf
2.	Total Unit Weight	125 pcf
3.	Angle of Internal Friction - Backfill against Structures	32 degrees
4.	Earth Pressure Coefficient (See Note 1)	
	Active Earth Pressure (Ka)	0.31
	Earth Pressure @ Rest (Ko)	0.47
	Passive Earth Pressure (Kp)	3.25
5.	Coefficient of Sliding (concrete over soil)	0.45
6.	Subgrade Modulus for Floor Slab Design Granular Fill	175 pci
7.	Slopes (above groundwater)	
	Maximum Cut Slope in Soil	2.0 H:1V
	Maximum Fill Slope in Soil	2.0 H:1V
8.	Seismic Design Criteria- Site Class	D
9.	Minimum Footing Depth (exterior footings)	3.5 feet

Notes:

- 1.) A drainage medium should be installed along all retaining walls to avoid hydrostatic pressures from developing.
- 2.) Compaction equipment used within 5± feet of permanent walls should not weigh more than 5,000 pounds.

N:\ACAD\9065\BORING AND TEST PIT LOCATION PLAN.DWG 07/18/18 04:03:09PM, jenny, LAYOUT: FIG-1A



-  TEST PITS
-  BORING LOCATIONS
-  STP-101
FILL 6.5'+
PREVIOUS TEST PIT DOWN BY SESI
INDICATE FILL THICKNESS
WHERE ENCOUNTERED
-  MW-1
MONITORING WELL

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REFERENCE
 ALL INFORMATION TAKEN FROM DRAWING PREPARED BY DIVNEY TUNG SCHWALBE, LLP. UNDATED.

NOTE:
 THIS PLAN IS FOR LOCATING BORINGS AND TEST PITS ONLY. OTHER SITE WORK SHOWN HERE IS NOT INTENDED FOR CONSTRUCTION.

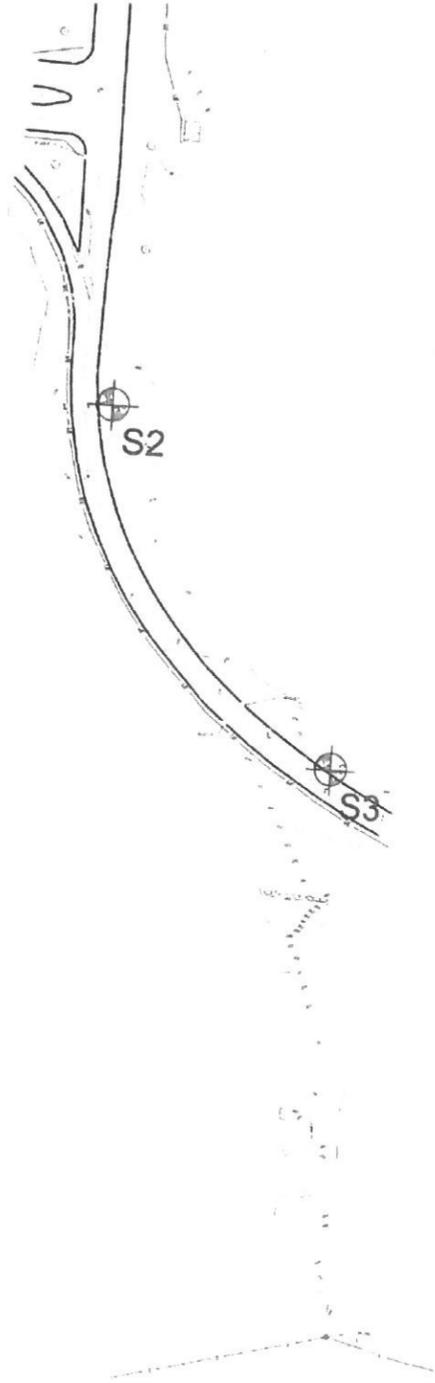
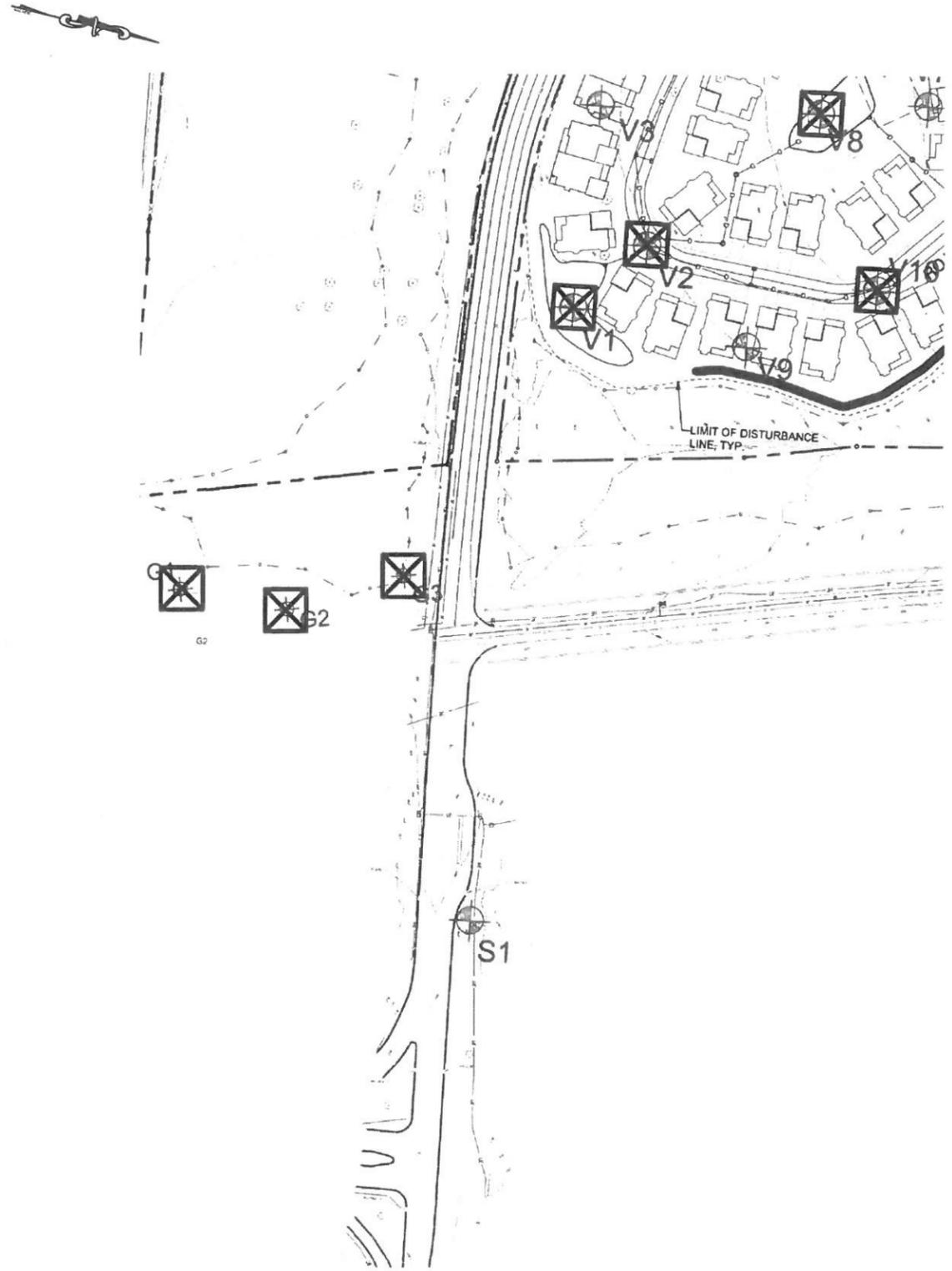
<p>BRIGID FLANIGAN DRIVE PURCHASE, NEW YORK</p> <p>project:</p>	<p>BORING AND TEST PIT LOCATION PLAN</p> <p>drawing title:</p>
<p>SESI CONSULTING ENGINEERS D.P.C.</p> <p>SOILS / FOUNDATIONS SITE DESIGN ENVIRONMENTAL</p> <p>12A MAPLE AVE. PINE BROOK, N.J. 07058 PH: 973-606-9050</p>	
<p>job no: 9065 drawing no:</p>	
<p>FIG-1A</p>	
<p>dwg by: yy chk by: JN scale: N.T.S. date: 07/12/18</p>	

N:\ACAD\9065\9065 BORING AND TEST PIT LOCATION PLAN.DWG 07/17/18 02:34:21PM, Jenny, LAYOUT: FIG-1B

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NOTE:
THIS PLAN IS FOR LOCATING BORINGS AND TEST PITS ONLY.
OTHER SITE WORK SHOWN HERE IS NOT INTENDED FOR CONSTRUCTION.



project: BRIGID FLANAGAN DRIVE PURCHASE, NEW YORK
drawing title: BORING AND TEST PIT LOCATION PLAN

job no: 9065
drawing no:

FIG-1B

SESI
CONSULTING ENGINEERS D.P.C.
SOILS / FOUNDATIONS SITE DESIGN ENVIRONMENTAL
12A MAPLE AVE. PINE BROOK, N.J. 07058 PH: 973-808-9050

dwg by: yy
chk by: JN
scale: N.T.S.
date: 07/12/18

				PROJECT NAME:		SUNY		BORING NO.		AL1			
				LOCATION:		Purchase, NY		JOB NO.		9065			
				METHOD:		H.S.A		GROUND ELEVATION:		320.7±			
BORING BY: General Borings Inc.				DATE STARTED:		6/12/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP				DATE COMPLETED:		6/12/2018		0 Hr.	NE	Date	6/12/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0													
5	S-1	15	0		1	2			6	Topsoil			
				2			4	8		Brown coarse to fine SAND, little Silt, little coarse to fine Gravel			
	S-2	18	2		5	7			15	Same			
				4			8	17					
10										Same			
	S-3	19	5		18	31			73				
				7			42	24		Gray fine SAND, some coarse to fine Gravel, little Clayey Silt			
	S-4	5	7		22	28			74				
15				9			46	50		Cobbles encountered from 7-9'			
	S-5	3	10	10.8	41	50/3"				Dark-brown coarse GRAVEL, some Silty Clay, trace Sand Boulder from 10' to 12'			
20										Brown fine SAND, trace Silt, trace Gravel, with Mica			
	S-6	16	15		17	17			43				
				17			26	37					
25										Gray coarse to fine GRAVEL, some coarse to fine Sand, trace Clayey Silt with Cobbles			
	S-7	3	20	20.3	50/4"					Boulder from 20' to 22'			
30										Brown fine SAND, little medium to fine Gravel, little Silt with Boulders and Cobbles			
	S-8	5	25	25.4	50/5"								
35													
40													

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burnmister unless otherwise noted.

FIGURE 2

			PROJECT NAME:		SUNY				BORING NO.		AL2		
			LOCATION:		Purchase, NY				JOB NO.		9065		
			METHOD:		H.S.A				GROUND ELEVATION:		323.7±		
BORING BY:			General Borings Inc.		DATE STARTED:		6/12/2018		GROUNDWATER TABLE DEPTH				
INSPECTOR:			TP		DATE COMPLETED:		6/12/2018		0 Hr.	NE	Date 6/12/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0													
5	S-1	18	0		7	4			8	Topsoil			
				2			4	6					
5	S-2	20	2		9	9			20	Brown medium to fine SAND, little medium to fine Gravel, little Silt			
				4			11	14					
10	S-3	21	5		7	14			37	Same			
				7			23	20		Orange-brown/gray-brown medium to fine SAND, little medium to fine Gravel, little Silt			
	S-4	16	7		7	23			51	Brown fine SAND, little Silt, trace Gravel			
				9			28	35					
15										BORING COMPLETE AT 9± FEET Refusal on Probable Boulder			
20													
25													
30													
35													
40													

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 3

			PROJECT NAME:		SUNY				BORING NO.		AL3							
			LOCATION:		Purchase, NY				JOB NO.		9065							
			METHOD:		H.S.A				GROUND ELEVATION:		325.2±							
BORING BY: General Borings Inc.			DATE STARTED:		6/11/2018				GROUNDWATER TABLE DEPTH									
INSPECTOR: TP			DATE COMPLETED:		6/11/2018				0 Hr.		12±		Date 6/11/2018		24 Hr.		Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol							
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS						
0	S-1	18	0		1	2			5	6" Topsoil								
				2			3	4		Light brown Silty CLAY, little medium to fine Sand, trace Gravel								
	S-2	22	2		15	20			42									
				4				22	23		Brown medium to fine SAND, little Silt, little medium to fine Gravel							
5																		
	S-3	20	5		27	19			41	Same								
				7			22	21										
10	S-4	18	7		19	20			49	Brown medium to fine SAND, some Silt, little medium to fine Gravel								
				9			29	30										
15	S-5	7	10	10.9	40	50/5"				Brown medium to fine Sand, and Silty Clay, little medium to fine Gravel with Cobbles								
										Boulder 12.5' to 14'								
20	S-6	22	15		25	38				Gray-brown medium to fine SAND, some coarse to fine Gravel, little Silt with Cobbles								
				16.4			50/5"											
25	S-7	4	20	20.3	50/4"					Brown medium to fine SAND, some medium to fine Gravel, little Silt with Cobbles								
30	S-8	13	25		26	29				Same								
				26.3			50/3"											
35																		
40																		

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 4

				PROJECT NAME:		SUNY		BORING NO.		C1			
				LOCATION:		Purchase, NY		JOB NO.		9065			
				METHOD:		H.S.A		GROUND ELEVATION:		322.3±			
BORING BY: General Borings Inc.				DATE STARTED:		6/12/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP				DATE COMPLETED:		6/12/2018		0 Hr.	NE	Date	6/12/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0													
5	S-1	18	0		1	3			8	Topsoil			
				2			5	7		Brown medium to fine SAND, some Silt, trace Gravel			
	S-2	23	2		8	12			30	Same			
				4			18	15					
10	S-3	21	5		10	5			10	Brown medium to fine SAND, some Silt, some coarse to fine Gravel			
				7			5	5					
	S-4	22	7		7	7			13	Same			
				9			6	10					
15	S-5	20	10		27	32			79	Gray-brown fine Sand, and Silt, some medium to fine Gravel			
				11.8			47	50/3"					
20	S-6	13	15		25	37				Same with Cobbles			
				16.4			50/5"						
25	S-7	20	20		40	41			85	Orange-brown/brown medium to fine SAND, little medium to fine Gravel, trace Silt with Boulders and Cobbles, and Mica			
				22			44	35					
	S-8	22	23		28	25				Same with Cobbles			
				24.4			50/5"						
30										BORING COMPLETE AT 24.4± FEET			
35													
40													

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 5

SESI CONSULTING ENGINEERS			PROJECT NAME:		SUNY		BORING NO.		C2			
			LOCATION:		Purchase, NY		JOB NO.		9065			
			METHOD:		H.S.A		GROUND ELEVATION:		323.1±			
BORING BY: General Borings Inc.			DATE STARTED:		6/11/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/11/2018		0 Hr.	12±	Date	6/11/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	16	0		3	6			13	6" Topsoil;		
				2				7	50/3"	Brown medium to fine SAND, some Silt, trace Gravel		
										W.C.=16.8% (-200)=31.7%		
5												
	S-2	24	5		12	20			41	Same		
				7				21	31			
	S-3	24	7		27	28			59	Orange-brown/gray-brown medium to fine SAND, little medium		
				9				31	36	to fine Gravel, little Silt		
10												
	S-4	14	10		43	38			65	Same Brown		
				12				27	23			
15												
	S-5	15	15		21	47			94	Gray-brown coarse to fine SAND, some medium to fine Gravel,		
				17				47	49	little Silt		
20												
	S-6	5	20	20.4	50/5"					Same with Cobbles		
25												
	S-7	7	25	25.8	48	50/3"				Same with Cobbles		
30												
										BORING COMPLETE AT 25.8± FEET		
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 6

			PROJECT NAME:		SUNY				BORING NO.		C3			
			LOCATION:		Purchase, NY				JOB NO.		9065			
			METHOD:		H.S.A				GROUND ELEVATION:		325.8±			
BORING BY:			General Borings Inc.		DATE STARTED:		6/11/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR:			TP		DATE COMPLETED:		6/11/2018		0 Hr.	NE	Date 6/11/2018	24 Hr.	14±	Date 6/12/2018
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol			
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS		
0	S-1	11	0		3	6			9	Topsoil				
				2				3	7	Brown medium to fine SAND, little Silt, little medium to fine Gravel				
	S-2	12	2		6	14			39	Brown coarse to fine SAND, little Clayey Silt, little medium to fine Gravel				
				4				25	23	W.C.=9.1% (-200)=16.2%				
5														
	S-3	10	5		19	36			86	Same				
				6.3				50/3"						
10														
	S-4	21	10		10	25			70	Gray-brown medium to fine SAND, little Silt, little medium to fine Gravel				
				12				45	41					
15														
	S-5	0	15	15.7	48	50/2"				... with Cobbles				
20														
	S-6	6	20	20.7	42	50/2"				Brown medium to fine SAND, some coarse to fine Gravel, little Silt				
										Boulders from 21-22'				
25														
	S-7	8	25	25.8	40	50/3"				Same				
30														
										BORING COMPLETE AT 25.8± FEET (Well installed to 25')				
35														
40														

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burnister unless otherwise noted.

FIGURE 7

			PROJECT NAME:		SUNY				BORING NO.		11		
			LOCATION:		Purchase, NY				JOB NO.		9065		
			METHOD:		H.S.A				GROUND ELEVATION:		306.6±		
BORING BY:			General Borings Inc.		DATE STARTED:		6/18/2018		GROUNDWATER TABLE DEPTH				
INSPECTOR:			TP		DATE COMPLETED:		6/18/2018		0 Hr.	9±	Date 6/18/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0	S-1	15	0		3	4			7	1" Asphalt			
				2				3	5	Brown medium to fine SAND, little Clayey Silt, trace Gravel			
5													
	S-2	19	5		3	3			9	Gray-brown medium to fine SAND, little medium to fine Gravel, little Silt			
				7				6	3				
10													
	S-3	18	10		13	30			70	Same with Cobbles			
				12				40	31				
15													
	S-4	14	15		41	38				Same with Cobbles			
				16.3				50/3"					
20										BORING COMPLETE AT 16.3± FEET			
25													
30													
35													
40													

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 8

			PROJECT NAME:		SUNY				BORING NO.		12		
			LOCATION:		Purchase, NY				JOB NO.		9065		
			METHOD:		H.S.A				GROUND ELEVATION:		310.3±		
BORING BY:			General Borings Inc.		DATE STARTED:		6/18/2018		GROUNDWATER TABLE DEPTH				
INSPECTOR:			TP		DATE COMPLETED:		6/18/2018		0 Hr.	14±	Date 6/18/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0	S-1	20	0		3	7			14	6" Topsoil			
				2			7	8		Brown medium to fine SAND, little fine Gravel, little Silt			
5													
	S-2	21	5		9	12			22	Same			
				7			10	10					
10													
	S-3	23	10		15	38			62	Gray-brown medium to fine SAND, some coarse to fine Gravel, little Silt			
				12			24	25					
15													
	S-4	7	15	15.8	20	50/4"				Same with Cobbles			
20										BORING COMPLETE AT 16.4± FEET			
25													
30													
35													
40													

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 9

			PROJECT NAME:		SUNY				BORING NO.		13	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		316.3±	
BORING BY: General Borings Inc.			DATE STARTED:		6/18/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/18/2018		0 Hr. 13±		Date 6/18/2018		24 Hr. Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	0	0		3	6			13	6" Topsoil		
				2			7	6		No recovery, Probable Boulder or Cobbles		
5												
	S-2	20	5		10	8				Orange-brown/brown medium to fine SAND, little coarse to fine Gravel, little Silt		
				6.4			50/5"					
10												
	S-3	18	10		5	5			18	Gray-brown medium to fine SAND, little coarse to fine Gravel, little Silt		
				12			13	12				
15												
	S-4	18	15		11	15			35	Same		
				17			20	21				
20										BORING COMPLETE AT 17± FEET		
25												
30												
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1 1/8 in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 10

			PROJECT NAME:		SUNY				BORING NO.		IE1			
			LOCATION:		Purchase, NY				JOB NO.		9065			
			METHOD:		H.S.A				GROUND ELEVATION:		317.2±			
BORING BY:			General Boring Inc.		DATE STARTED:		6/7/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR:			TP		DATE COMPLETED:		6/7/2018		0 Hr.	16±	Date	6/7/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol			
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS		
0	S-1	14	0		3	2			6	Topsoil				
				2			4	6		Gray-brown Silty CLAY, some coarse to fine Sand, little coarse to fine Gravel				
	S-2	12	2		5	12			32	Same				
				4			20	19						
5														
	S-3	20	5		12	17			36	Orange-brown/Gray-brown medium to fine SAND, some Clayey Silt, little medium to fine Gravel				
				7			19	22	46	Same Brown				
	S-4	21	7		7	21								
10				9			25	24						
	S-5	6	10	11.3	25	48				Brown medium to fine SAND, little Silt, little medium to fine Gravel				
							50/3"							
15														
	S-6	24	15		20	41			84	Gray fine SAND, little Silt				
				17			43	47						
20														
	S-7	14	20	21.4	43	48				Gray medium to fine SAND, some Silt, little medium to fine Gravel with Cobbles				
							50/5"							
25														
	S-8	5	25	25.4	50/5"									
30														
35														
40														

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 11

			PROJECT NAME:		SUNY			BORING NO.		IE2		
			LOCATION:		Purchase, NY			JOB NO.		9065		
			METHOD:		H.S.A			GROUND ELEVATION:		320.2±		
BORING BY: General Boring Inc.			DATE STARTED:		6/8/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/8/2018		0 Hr.	NE	Date	6/8/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0												
5	S-1	14	0		1	2			8	6" Topsoil		
				2			6	5		Gray/red-brown medium to fine SAND, some Silt, little coarse to fine Gravel		
	S-2	20	2		3	7			19	Same		
				4			7	14				
10	S-3	20	5		8	14			19	Same		
				7			15	26				
	S-4	24	7		17	28			70	Same		
				9			42	45				
15	S-5	8	10	11	16	50				Gray-brown medium to fine SAND, trace Gravel, trace Silt		
20	S-6	6	15	15.8	4	50/6"				Gray-brown medium to fine Sand, some Clayey Silt, some coarse to fine Gravel		
BORING COMPLETE AT 18± FEET Auger Refusal at 18'												
25												
30												
35												
40												

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1 3/8 in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 12

			PROJECT NAME:		SUNY				BORING NO.		IE3	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		322.4±	
BORING BY: General Boring Inc.			DATE STARTED:		6/8/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/8/2018		0 Hr. 11±		Date 6/8/2018		24 Hr. Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0												
5	S-1	14	0		2	2			9	Topsoil		
				2			7	6		Light gray-brown medium to fine SAND, little coarse to fine Gravel, little Silt		
	S-2		2		5	7			17		Same	
					4			10	30			
10	S-3	20	5		23	20			42	Same... some Silt		
				7			22	35		Same		
	S-4	24	7		28	25			58		Same	
					9			33	31			
15	S-5	22	10		15	22			55	Gray-brown some coarse to fine SAND, some coarse to fine Gravel, trace Silt		
				12			33	35				
20	S-6	19	15		16	20			54	Gray medium to fine SAND, little Silt, trace Gravel		
				17			34	48				
25	S-7	21	20		40	36			76	Same		
				22			40	41				
30	S-8	24	25		15	38			87	Same with Cobbles		
				27			49	50				
BORING COMPLETE AT 27 ± FEET												
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 13

SESI CONSULTING ENGINEERS			PROJECT NAME:		SUNY				BORING NO.		IE5	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		318.1±	
BORING BY: General Borings Inc.			DATE STARTED:		6/8/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/11/2018		0 Hr. 10±		Date 6/11/2018		24 Hr. Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	21	0		1	2			7	Topsoil		
				2			5	9		Gray/orange-brown Silty CLAY, little coarse to fine Sand, little medium to fine Gravel		
	S-2	18	2		5	12			23	Orange-brown/gray medium to fine Sand, and Silty Clay, trace Gravel		
				4			11	12				
5	S-3	24	5		7	11			22	Same		
				7			11	11				
	S-4	16	7		8	12			20	Brown medium to fine Sand, some Clayey Silt, little coarse to fine Gravel		
				9			8	9				
10	S-5	2	10	11.4	22	45				Same		
							50/5"					
15	S-6	17	15		18	31			80	Gray-brown medium to fine SAND, little medium to fine Gravel, little Silt		
				17			49	35				
20	S-7	17	20	21.4	40	43				Same		
							50/5"					
25	S-8	18	25		8	18			37	Same		
				27			19	46				
30	BORING COMPLETE AT 27± FEET											
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1 1/8 in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

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Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

			PROJECT NAME:		SUNY				BORING NO.		IE6		
			LOCATION:		Purchase, NY				JOB NO.		9065		
			METHOD:		H.S.A				GROUND ELEVATION:		316.5±		
BORING BY:			General Boring Inc.		DATE STARTED:		6/7/2018		GROUNDWATER TABLE DEPTH				
INSPECTOR:			TP		DATE COMPLETED:		6/7/2018		0 Hr.	8±	Date 6/7/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0	S-1	12	0		1	2			5	Topsoil			
				2			3	9		Gray/red-brown medium to fine SAND, little Clayey Silt, trace Gravel			
	S-2	14	2		11	16			29	Same			
				4			13	16					
5	S-3	20	5		7	9			21	Same			
				7			12	11					
	S-4	21	7		1	8			18	Brown medium to fine SAND, little Silt, trace Gravel			
				9			10	9					
10	S-5	18	10		7	7			23	Gray-brown medium to fine SAND, little Silt, little medium to fine Gravel			
				12			16	20					
	S-6	24	15	16.9	10	25			64	Same trace Gravel with Cobbles			
							39	50/5"					
20	S-7	18	20	21.9	19	50/5"				Same with Cobbles			
	S-8	20	25		20	25			51	Same			
				27			26	27					
30	BORING COMPLETE AT 27± FEET												
35													
40													

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

			PROJECT NAME:		SUNY			BORING NO.		IE7		
			LOCATION:		Purchase, NY			JOB NO.		9065		
			METHOD:		H.S.A			GROUND ELEVATION:		315.2±		
BORING BY: General Boring Inc.			DATE STARTED:		6/7/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/7/2018		0 Hr.	15±	Date	6/7/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	12	0		3	3			5	Topsoil		
				2			2	10				
5	S-2	12	2		6	20			50	Orange-brown/brown medium to fine SAND, some Silt, trace Gravel W.C.=9.2% (-200)=26.5%		
				4			30	36				
10	S-3	24	5		7	7			14	Brown/gray medium to fine SAND, and Silt, trace Gravel		
				7			7	11				
	S-4	24	7		8	11			26	Same		
				9			15	15				
15	S-5	19	10		29	29			55	Gray-brown medium to fine SAND, some Silt, little coarse to fine Gravel W.C.=9.6% (-200)=29.2%		
				12			26	29				
20	S-6	12	15	16.5	30	35				Same		
								50				
25	S-7	19	20		31	29			66	Same		
				22			37	28				
30	S-8	0	25	25.9	47	50/4"				Same		
35										BORING COMPLETE AT 26 ± FEET		
40										BORING COMPLETE AT 26 ± FEET		

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 17

			PROJECT NAME:		SUNY				BORING NO.		IW1	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		313.3±	
BORING BY: General Boring Inc.			DATE STARTED:		6/15/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/15/2018		0 Hr. 11±		Date 6/15/2018		24 Hr. Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0												
5	S-1	15	0		3	4			10	8" Topsoil		
				2			6	11		Possible Fill: Brown medium to fine SAND, some Silt, little fine Gravel		
										W.C.=12.0% (-200)=34.8%		
10	S-2	23	5		15	15			35	Same		
				7			20	18				
15	S-3	8	10		21	25				Gray-brown medium to fine SAND, some Silt, little coarse		
				11.4			50/5"			to fine Gravel		
										W.C.=10.1% (-200)=29.1%		
20	S-4	3	15	15.4	50/5"					Boulder at 15', spoon filled with boulder cuttings		
BORING COMPLETE AT 15.4± FEET												
25												
30												
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

SESI CONSULTING ENGINEERS			PROJECT NAME: SUNY		BORING NO. IW2						
			LOCATION: Purchase, NY		JOB NO. 9065						
			METHOD: H.S.A		GROUND ELEVATION: 314.5±						
BORING BY: General Boring Inc.			DATE STARTED: 6/15/2018		GROUNDWATER TABLE DEPTH						
INSPECTOR: TP			DATE COMPLETED: 6/15/2018		0 Hr. 10.5± Date 6/15/2018 24 Hr. Date						
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24			
0	S-1	20	0		2	4			9	8" Topsoil	
				2			5	8			
5										Orange-brown/brown Clayey SILT, little medium to fine Sand, little coarse to fine Gravel	
10	S-2	24	5		18	21			38	Brown coarse to fine SAND, some coarse to fine Gravel, little Silt	
				7			17	20			
15	S-3	20	10		24	21			48	Brown medium to fine SAND, some coarse to fine Gravel, little Silt	
				12			27	21			
20	S-4	21	15		14	20			44	Red-brown medium to fine SAND, some coarse to fine Gravel, trace Silt with Mica	
				17			24	26			
25	S-5	19	20		29	31			80	Same Red-brown/brown	
				22			49	39			
30										BORING COMPLETE AT 22± FEET	
35											
40											

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

SESI CONSULTING ENGINEERS			PROJECT NAME: SUNY		BORING NO. IW3						
			LOCATION: Purchase, NY		JOB NO. 9065						
			METHOD: H.S.A		GROUND ELEVATION: 316.3±						
BORING BY: General Boring Inc.			DATE STARTED: 6/14/2018		GROUNDWATER TABLE DEPTH						
INSPECTOR: TP			DATE COMPLETED: 6/14/2018		0 Hr. 14±	Date 6/14/2018 24 Hr. Date					
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24			
0	S-1	13	0		3	5			10	Topsoil	
				2			5	12			Brown medium to fine SAND, little medium to fine Gravel, little Silt
5	S-2	20	5		21	12			36	Same	
				7			24	22			
10	S-3	14	10		24	49			87	Gray-brown medium to fine SAND, little medium to fine Gravel, little Silt	
				12			38	43			
15	S-4	13	15		13	34			66	Same with Cobbles	
				16.8			32	50/4"			
20	S-5	5	20	20.4	50/5"					Red-brown medium to fine SAND, some medium to fine Gravel, trace Silt with Mica, Cobbles	
25	S-6	4	25	25.1	50/2"					Gray-brown medium to fine SAND, some medium to fine Gravel, little Silt with Mica and Cobbles	
											BORING COMPLETE AT 25± FEET
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1½ in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burnister unless otherwise noted.

SESI CONSULTING ENGINEERS			PROJECT NAME: SUNY		BORING NO. IW4						
			LOCATION: Purchase, NY		JOB NO. 9065						
			METHOD: H.S.A		GROUND ELEVATION: 317.1±						
BORING BY: General Boring Inc.			DATE STARTED: 6/15/2018		GROUNDWATER TABLE DEPTH						
INSPECTOR: TP			DATE COMPLETED: 6/15/2018		0 Hr. NE	Date 6/15/2018 24 Hr. Date					
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24			
0	S-1	11	0		2	3			11	6" Topsoil	
				2			8	8		Light-brown coarse to fine SAND, little Silt, little fine Gravel	
										W.C.=11.9% (-200)=20.0%	
5											
	S-2	22	5		8	16			39	Brown coarse to fine SAND, some Clayey Silt, little coarse to fine Gravel	
				7			23	21		W.C.=11.9% (-200)=29.9%	
10											
	S-3	16	10		25	26			60	Gray-brown medium to fine SAND, some coarse to fine Gravel, little Silt	
				12			34	38			
15											
	S-4	18	15		20	29			78	Red-brown medium to fine SAND, little medium to fine Gravel, trace Silt with Mica and Cobbles	
				16.9			49	50/5"		Boulders encountered 17' to 18'	
20											
	S-5	3	20		12	28			52	...grading to little coarse to fine Gravel with occasional Boulders.	
				22			24	31			
25										BORING COMPLETE AT 20± FEET	
30											
35											
40											

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 21

			PROJECT NAME:		SUNY				BORING NO.		IW5			
			LOCATION:		Purchase, NY				JOB NO.		9065			
			METHOD:		H.S.A				GROUND ELEVATION:		319.7±			
BORING BY: General Boring Inc.			DATE STARTED:		6/14/2018		GROUNDWATER TABLE DEPTH							
INSPECTOR: TP			DATE COMPLETED:		6/14/2018		0 Hr.	9±	Date	6/14/2018	24 Hr.	12±	Date	6/15/2018
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol			
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24						
0											USCS			
5	S-1	14	0		1	3			8	8" Topsoil				
				2			5	7		Gray/brown Silty CLAY, little coarse to fine Sand, little medium to fine Gravel				
	S-2	4	2	2.1	50/2"					Same				
10	S-3	8	5		21	16			31	Brown Clayey SILT, little medium to fine Sand, little medium to fine Gravel				
				7			15	17						
15	S-4	12	10		15	20			60	Brown medium to fine SAND, some fine Gravel, little Silt				
				11.9			40	50/5"						
20	S-5		15		37	49			84	Same				
				17			35	24						
25	S-6		20		40	31			63	Same with Cobbles				
				21.7			32	50/3"						
										Augered to 25 Feet				
30									BORING COMPLETE AT 25± FEET					
									Well installed to 25 Feet					
35														
40														

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1 1/8 in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

			PROJECT NAME:		SUNY				BORING NO.		IW6	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		316.7±	
BORING BY: General Boring Inc.			DATE STARTED:		6/15/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/15/2018		0 Hr. NE		Date 6/15/2018		24 Hr. Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	18	0		1	3			6	Topsoil		
				2			3	3			Brown medium to fine SAND, little medium to fine Gravel, little Silt	
5												
10	S-2	22	5		9	11			26	Gray-brown medium to fine SAND, some Silt, little medium to fine Gravel		
				7			15	13				
15	S-3	23	10		16	28			53	Same		
				12			25	22				
20	S-4	0	15	15.1	50/1"					Boulder 15' to 16', no recovery		
BORING COMPLETE AT 17± FEET												
25												
30												
35												
40												

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1 1/8 in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 23

			PROJECT NAME:		SUNY				BORING NO.		IW7	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		314.7±	
BORING BY: General Boring Inc.			DATE STARTED:		6/15/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/15/2018		0 Hr.	NE	Date	6/15/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	14	0		6	3			7	6" Topsoil		
				2			4	4		Orange-brown/brown Clayey SILT, little coarse to fine Sand, little medium to fine Gravel		
5												
	S-2	22	5		5	9			21	Brown medium to fine SAND, little medium to fine Gravel, little Silt		
				7			12	11				
10												
	S-3	15	10		10	15			27	Gray-brown medium to fine SAND, some medium to fine Gravel, little Silt		
				12			12	19				
15												
	S-4	17	15		31	39			78	Same		
				17			49	43				
20	S-5	0	18	50/5"								
										BORING COMPLETE AT 18.5± FEET Auger Refusal at 18.5± Feet		
25												
30												
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1% in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 24

SESI CONSULTING ENGINEERS			PROJECT NAME: SUNY		BORING NO. S1						
			LOCATION: Purchase, NY		JOB NO. 9065						
			METHOD: H.S.A		GROUND ELEVATION: 277.7±						
BORING BY: General Borings Inc.			DATE STARTED: 6/18/2018		GROUNDWATER TABLE DEPTH						
INSPECTOR: TP			DATE COMPLETED: 6/18/2018		0 Hr.	13'±					
					Date	6/18/2018					
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24			
0	S-1	20	0		4	3			7	8" Topsoil	
				2			4	4		Brown medium to fine SAND, some coarse to fine Gravel, some Silt	
5											
	S-2	14	5		5	4			7	Gray Silty CLAY, little fine Sand, little medium to fine Gravel	
				7			3	7			
10											
	S-3	8	10	10.7	4	50/3"				Same Gray/orange-brown with Cobbles	
										Boulder from 10.5' to 11'	
15											
	S-4	24	15		5	13			21	Gray medium to fine SAND, and Clayey Silt, trace Gravel	
				17			8	13			
20										BORING COMPLETE AT 17± FEET	
25											
30											
35											
40											

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1 3/4 in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

			PROJECT NAME:		SUNY				BORING NO.		S2	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		279.0±	
BORING BY: General Borings Inc.			DATE STARTED:		6/18/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/18/2018		0 Hr.	12±	Date	6/18/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	18	0		6	8			19	6' Topsoil		
				2				11	11	Brown medium to fine Sand, some medium to fine Gravel, some Silt		
5												
	S-2	24	5		5	9			16	Brown medium to fine SAND, some Silt, little medium to fine Gravel		
				7				7	8			
10												
	S-3	10	10	10.7	9	50/3"				Gray-brown medium to fine SAND, some medium to fine Gravel, little Silt with Cobbles		
15												
	S-4	4	15		18	35			83	Gray-brown medium to fine Sand, some coarse to fine Gravel, some Silt		
				17				48	27			
20												
	S-5	10	20	20.8	30	50/4"				Red-brown/gray-brown medium to fine SAND, some medium to fine Gravel, trace Silt with Boulders and Cobbles		
25										BORING COMPLETE AT 20.8± FEET		
30												
35												
40												

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

			PROJECT NAME:		SUNY				BORING NO.		S3		
			LOCATION:		Purchase, NY				JOB NO.		9065		
			METHOD:		H.S.A				GROUND ELEVATION:		272.2±		
BORING BY:			General Borings Inc.		DATE STARTED:		6/18/2018		GROUNDWATER TABLE DEPTH				
INSPECTOR:			TP		DATE COMPLETED:		6/18/2018		0 Hr.	10±	Date 6/18/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0	S-1	22	0		4	9			20	6" Topsoil			
				2			11	10		Brown medium to fine SAND, little fine Gravel, little Silt			
5													
	S-2	22	5		7	6			12	Brown medium to fine SAND, some Silt, little coarse to fine Gravel			
				7			6	7					
10													
	S-3	23	10		20	20			48	Gray-brown medium to fine SAND, little medium to fine Gravel, little Silt			
				12			28	24					
15													
	S-4	24	15		12	25			61	Same			
				17			36	48					
20										BORING COMPLETE AT 17± FEET			
25													
30													
35													
40													

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1 1/4 in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 27

			PROJECT NAME:		SUNY		BORING NO.		V3			
			LOCATION:		Purchase, NY		JOB NO.		9065			
			METHOD:		H.S.A		GROUND ELEVATION:		284.3±			
BORING BY: General Borings Inc.			DATE STARTED:		6/13/2018		GROUNDWATER TABLE DEPTH					
INSPECTOR: TP			DATE COMPLETED:		6/13/2018		0 Hr.	NE	Date	6/13/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				
0											USCS	
5	S-1	18	0		3	4			7	6" Topsoil		
				2			3	5		Brown/Gray Clayey SILT, little medium to fine Sand, little fine Gravel		
	S-2	20	2		13	16			33	Same		
				4			17	18				
10	S-3	24	5		5	10			27	Brown Silty CLAY, little medium to fine Sand, little medium to fine Gravel		
				7			17	13				
	S-4	14	7		6	21			59	Gray-brown medium to fine SAND, some medium to fine Gravel, some Silt		
				9			38	18				
15	S-5	13	10		24	49				Same		
				11.1			50/2"					
20	S-6	20	15		19	30				Same		
				17			27	40				
	S-7	0	18	18.2	50/3"					Boulder		
BORING COMPLETE AT 18.2± FEET												
25												
30												
35												
40												

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1 1/2 in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burnmaster unless otherwise noted.

				PROJECT NAME:		SUNY		BORING NO.		V5	
				LOCATION:		Purchase, NY		JOB NO.		9065	
				METHOD:		H.S.A		GROUND ELEVATION:		288.3±	
BORING BY: General Borings Inc.				DATE STARTED:		6/13/2018		GROUNDWATER TABLE DEPTH			
INSPECTOR: TP				DATE COMPLETED:		6/14/2018		0 Hr. 12±		Date 6/14/2018 24 Hr. Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24			
0											
	S-1	0	0	0.4	50/5"					Topsoil with Boulders and Cobbles	
5											
	S-2	20	5		10	14			29	Brown medium to fine SAND, little Silt, little medium to fine Gravel	
							15	14			
10											
	S-3	NR	10	10.4	50/5"					Boulder 10' to 11'	
15											
	S-4	6	15	15.4	50/5"					Gray medium to fine SAND, little medium to fine Gravel, trace Clayey Silt with Cobbles	
20										BORING COMPLETE AT 15.4± FEET	
25											
30											
35											
40											

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1 1/8 in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod
 Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 29

SESI CONSULTING ENGINEERS			PROJECT NAME:		SUNY				BORING NO.		V7	
			LOCATION:		Purchase, NY				JOB NO.		9065	
			METHOD:		H.S.A				GROUND ELEVATION:		295.4±	
BORING BY:			General Borings Inc.		DATE STARTED:		6/14/2018		GROUNDWATER TABLE DEPTH			
INSPECTOR:			TP		DATE COMPLETED:		6/14/2018		0 Hr.		9±	
									Date		6/14/2018	
									24 Hr.		Date	
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol	
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS
0	S-1	18	0		1	2			5	6" Topsoil		
				2			3	6		Light-brown Clayey Silt and coarse to fine Sand, some medium to fine Gravel		
										W.C.=18.6% (-200)=39.4%		
5												
	S-2	20	5		12	9			19	Gray-brown medium to fine SAND, little medium to fine Gravel, little Silt		
				7			10	13				
10												
	S-3	5	10	10.8	32	50/4"				Brown medium to fine SAND, some Silt, little coarse to fine Gravel		
										W.C.=8.2% (-200)=32.0%		
15												
	S-4	0	15	15.1	50/1"					Boulder at 15'		
										BORING COMPLETE AT 15.1± FEET		
20												
25												
30												
35												
40												

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1½ in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 30

SESI CONSULTING ENGINEERS			PROJECT NAME: SUNY		BORING NO. V9						
			LOCATION: Purchase, NY		JOB NO. 9065						
			METHOD: H.S.A		GROUND ELEVATION: 285.2±						
BORING BY: General Borings Inc.			DATE STARTED: 6/13/2018		GROUNDWATER TABLE DEPTH						
INSPECTOR: TP			DATE COMPLETED: 6/13/2018		0 Hr. NE Date 6/13/2018 24 Hr. Date						
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24			
0											USCS
5	S-1	19	0		2	2			7	6" Topsoil	
				2			5	13		Brown/Gray Clayey SILT, some medium to fine Sand, trace Gravel	
	S-2	20	2		10	15			27	Orange-brown Same	
				4			12	14			
10	S-3	23	5		5	6			15	6" Brown Silty CLAY, some Silt, little medium to fine Sand	
				7			9	9		Brown medium to fine SAND, some Clayey Silt, little medium to fine Gravel	
	S-4	23	7		9	14			29	Gray-brown medium to fine SAND, some medium to fine Gravel, little Silt	
				9			15	20			
15	S-5	20	10		26	30			58	Same	
				12			28	31			
20	S-6	6	15	15.6	35	50/1"				Same with Cobbles	
25									BORING COMPLETE AT 20± FEET (Auger Refusal)		
30											
35											
40											

Nominal I.D. of Hole	in
Nominal I.D. of Split Barrel Sampler	1 3/4 in
Weight/type of Hammer on Drive Pipe	300 lb
Weight/type of Hammer on Split Barrel	140 lb
Drop of Hammer on Drive Pipe	in
Core Size	in

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

			PROJECT NAME:		SUNY				BORING NO.		V11		
			LOCATION:		Purchase, NY				JOB NO.		9065		
			METHOD:		H.S.A				GROUND ELEVATION:		292.2±		
BORING BY:			General Borings Inc.		DATE STARTED:		6/13/2018		GROUNDWATER TABLE DEPTH				
INSPECTOR:			TP		DATE COMPLETED:		6/13/2018		0 Hr.	18±	Date 6/13/2018	24 Hr.	Date
DEPTH (ft)	SAMPLE No.	REC (in)	DEPTH		Blows on Spoon				N (bl/ft)	SOIL DESCRIPTION AND STRATIFICATION	Symbol		
			FROM (ft)	TO (ft)	0/6	6/12	12/18	18/24				USCS	
0													
5	S-1	14	0		2	4			9	6" Topsoil			
				2			5	4		Brown medium to fine SAND, some Clayey Silt, little medium to fine Gravel			
	S-2	21	2		5	18			30	Same			
				4			12	12					
10	S-3	15	5		12	13			27	Gray-brown medium to fine SAND, some medium to fine Gravel, some Silt			
				7			14	25		Same			
	S-4	18	7		16	18			37	Same			
				9			19	23					
15	S-5	10	10		21	31			76	Same			
				12			45	49					
20	S-6	20	15		10	45			94	Same			
				17			49	49					
25	S-7	9	18		47	36			77	Gray-brown medium to fine SAND, some medium to fine Gravel, little Silt			
				19.7			41	50/3"					
										BORING COMPLETE AT ±19.7 FEET (Auger Refusal)			
30													
35													
40													

Nominal I.D. of Hole	in	The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted.
Nominal I.D. of Split Barrel Sampler	1 3/8 in	
Weight/type of Hammer on Drive Pipe	300 lb	
Weight/type of Hammer on Split Barrel	140 lb	
Drop of Hammer on Drive Pipe	in	
Core Size	in	

Pp: Pocket Penetrometer; WOH: Weight of Hammer; WOR: Weight of Rod

Approximate Change in Strata: _____ Inferred Change in Strata: _____

Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

FIGURE 32

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	G1
LOCATION	See Figure 1	APPROX. ELEV.	278.0±	INSPECTED BY	TP
WATER OBSERVATION	Not Encountered			DATE EXCAVATED	6/6/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 —	Topsoil	Very Loose
2 — — 3 — — 4 —	Gray-brown coarse to fine Sand and Silty Clay, little medium to fine Gravel with occasional Boulders	Medium Dense
5 — — 6 —	TEST PIT COMPLETE AT 6± FEET	
7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —		

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Fig. 33

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO.	G2
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>279.0±</u>	INSPECTED BY	TP
WATER OBSERVATION <u>Not Encountered</u>		DATE EXCAVATED	<u>6/6/2018</u>

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 —	Topsoil	Very Loose
2 — — 3 — — 4 — — 5 — — 6 —	Gray-brown coarse to fine SAND, some Silty Clay, little medium to fine Gravel with occasional Boulders	Medium Dense
7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	TEST PIT COMPLETE AT 6± FEET	

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Fig. 34

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	G3
LOCATION	See Figure 1	APPROX. ELEV.	282.0±	INSPECTED BY	TP
WATER OBSERVATION	Not Encountered			DATE EXCAVATED	6/6/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0		
1	Topsoil	Very Loose
2		
3		
4	Gray-brown coarse to fine Sand, some Clayey Silt, little coarse to fine Gravel with occasional Cobbles and Boulders	Medium Dense
5		
6		
7	TEST PIT COMPLETE AT 6± FEET	
8		
9		
10		
11		
12		
13		
14		

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Fig. 35

PROJECT NO. 9065 PROJECT Purchase, NY TEST PIT NO. I4
 LOCATION See Figure 1 APPROX. ELEV. 316.0± INSPECTED BY TP
 WATER OBSERVATION _____ 13.5' DATE EXCAVATED 6/6/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 — —	Topsoil	Very Loose
2 — — 3 — — 4 — — 5 — — 6 — —	Orange-brown/gray-brown Silty CLAY, little coarse to fine Sand, trace Gravel with occasional Boulders	Medium Stiff
7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Gray-brown coarse to fine SAND, some coarse to fine Gravel, some Silt with occasional Cobbles and Boulders	Medium Dense
	TEST PIT COMPLETE AT 15± FEET	

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Fig. 36

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO. <u>15</u>
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>321.3±</u>	INSPECTED BY <u>TP</u>
WATER OBSERVATION <u>Not Encountered</u>	DATE EXCAVATED <u>6/6/2018</u>	

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 —	Topsoil	
2 — — 3 —	Gray-brown coarse to fine SAND, some Clayey Silt, little coarse to fine Gravel, with occasional Cobbles	Medium Dense
4 — — 5 — — 6 —		
7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Gray-brown coarse to fine SAND, some Silt, little coarse to fine Gravel with occasional Cobbles and Boulders	Medium Dense
	TEST PIT COMPLETE AT 15± FEET	

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Fig. 37

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO.	16
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>325.8±</u>	INSPECTED BY	TP
WATER OBSERVATION	<u>12'±</u>	DATE EXCAVATED	<u>6/6/2018</u>

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 —	Topsoil	
2 — — 3 — — 4 — —	Fill: Dark brown/black coarse to fine SAND, some coarse to fine Gravel, some Clayey Silt with Wood, Metal, and occasional Boulders	Medium Dense
5 — — 6 —	2' Concrete pad with rebar	
7 — — 8 — — 9 — — 10 — — 11 — — 12 — —	Fill: Dark brown/black Silty Clay, some coarse to fine Sand, some coarse to fine Gravel with Wood, Metal and occasional Boulders	Medium Stiff
13 — — 14 —	Brown coarse to fine Sand and Silt, little coarse to fine Gravel with occasional Cobbles TEST PIT COMPLETE AT 15± FEET	Medium Dense

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Fig. 38

PROJECT NO.	9065	PROJECT	Purchase NY	TEST PIT NO.	17
LOCATION	See Figure 1	APPROX. ELEV.	326.7±	INSPECTED BY	TP
WATER OBSERVATION			14'±	DATE EXCAVATED	6/6/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 —		
—	Topsoil	Very Loose
1 —		
—		
2 —		
—		
3 —		
—		
4 —		
—	Brown coarse to fine SAND, some coarse to fine Gravel, little Clayey	Medium Dense
5 —	Silt with occasional Cobbles and Boulders	
—		
6 —		
—		
7 —		
—		
8 —		
—		
9 —		
—		
10 —		
—		
11 —		
—		
12 —		
—		
13 —	Gray-brown coarse to fine SAND, some coarse to fine Gravel, some	Medium Stiff
—	Silt with occasional Cobbles and Boulders	
14 —	TEST PIT COMPLETE AT 15± FEET	

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Fig. 39

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	18
LOCATION	See Figure 1	APPROX. ELEV.	328.2±	INSPECTED BY	TP
WATER OBSERVATION			13'±	DATE EXCAVATED	6/6/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 —		
—	Topsoil	
1 —		
—		
2 —		
—		
3 —	Brown coarse to fine SAND, little Silt, little fine Gravel with occsaional	Medium Dense
—	Cobbles and Boulders	
4 —		
—		
5 —		
—		
6 —		
—		
7 —		
—		
8 —		
—		
9 —	Gray-brown coarse to fine SAND, some Silt, some coarse to fine	Medium Dense
—	Gravel, with occasional Cobbles and Boulders	
10 —		
—		
11 —		
—		
12 —		
—		
13 —	Same, with Frequent Cobbles and Boulders	Stiff
—		
14 —	TEST PIT COMPLETE AT 16± FEET	

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Fig. 40

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	19
LOCATION	See Figure 1	APPROX. ELEV.	326.8±	INSPECTED BY	TP
WATER OBSERVATION	Not Encountered			DATE EXCAVATED	6/6/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 — —	Topsoil	
2 — — 3 — — 4 — — 5 — — 6 — —	Light Brown coarse to fine Sand, some Clayey Silt, some coarse to fine Gravel with occasional Cobbles and Boulders	Medium Dense
7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Gray-brown coarse to fine SAND, some Clayey Silt, some coarse to fine Gravel with occasional Cobbles and Boulders	Medium Dense
	TEST PIT COMPLETE AT 15± FEET	

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Fig. 41

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	I10
LOCATION	See Figure 1	APPROX. ELEV.	318.7±	INSPECTED BY	TP
WATER OBSERVATION	Seepage @ 12'±			DATE EXCAVATED	6/6/2018
DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION			RELATIVE DENSITY OR CONSISTENCY	
0	Topsoil				
1					
2					
3	Orange-brown/gray-brown Silty CLAY, little coarse to fine Sand, trace Gravel with occasional Boulders			Medium Stiff	
4					
5					
6					
7					
8					
9	Gray-brown coarse to fine SAND, little coarse to fine Gravel, little Silt with occasional Boulders and Cobbles			Medium Dense	
10					
11					
12					
13					
14	TEST PIT COMPLETE AT 15± FEET				

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Fig. 42

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO.	V1
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>281.3±</u>	INSPECTED BY	TP
WATER OBSERVATION <u>Seepage @ 14'±</u>		DATE EXCAVATED	6/5/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 —	Topsoil	Very Loose
2 — — 3 —	Gray-brown coarse to fine SAND, little coarse to fine Gravel with occasional Boulders	Medium Dense
4 — — 5 — — 6 — — 7 —	Gray-brown coarse to fine Gravel, some coarse to fine Sand, little Clayey Silt with occasional Boulders	Medium Dense
8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	TEST PIT COMPLETE AT 15± FEET	

SESI CONSULTING ENGINEERS D.P.C.

Fig. 43

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO.	V2
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>284.8±</u>	INSPECTED BY	TP
WATER OBSERVATION <u>Not Encounterd</u>		DATE EXCAVATED	<u>6/5/2018</u>

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — —	8" Topsoil	Very Loose
1 — — 2 — — 3 — — 4 — — 5 — — 6 — — 7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Gray-brown coarse to fine SAND, some Clayey Silt, some coarse to fine Gravel with occasional Boulders	Medium Dense
	TEST PIT COMPLETE AT 15± FEET	

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Fig. 44

PROJECT NO. <u>9065</u>		PROJECT <u>Purchase, NY</u>	TEST PIT NO.	V4
LOCATION <u>See Figure 1</u>		APPROX. ELEV. <u>288.3±</u>	INSPECTED BY	TP
WATER OBSERVATION		<u>Seepage @ 15'±</u>	DATE EXCAVATED	<u>6/5/2018</u>
DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY		
0 — — 1 —	Topsoil			
— 2 — — 3 —	Brown medium to fine SAND, some Silt, little coarse to fine Gravel with occasional Boulders	Medium Dense		
— 4 — — 5 — — 6 — — 7 —	Brown medium to fine SAND, some Silt, little coarse to fine Gravel with occasional Boulders	Medium Dense		
— 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	TEST PIT COMPLETE AT 15± FEET			

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Fig. 45

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO.	V6
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>296.1±</u>	INSPECTED BY	TP
WATER OBSERVATION <u>Seepage @ 14'±</u>		DATE EXCAVATED	<u>6/5/2018</u>

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 —	Topsoil	Very Loose
2 — — 3 — — 4 — —	Light brown coarse to fine SAND, some Silty Clay, trace Gravel	Medium Dense
5 — — 6 — — 7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Gray-brown coarse to fine SAND, some Silty Clay, some coarse to fine Gravel with occasional Boulders	Medium Dense
TEST PIT COMPLETE AT 15± FEET		

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Fig. 46

PROJECT NO. <u>9065</u>	PROJECT <u>Purchase, NY</u>	TEST PIT NO.	V8
LOCATION <u>See Figure 1</u>	APPROX. ELEV. <u>292.2±</u>	INSPECTED BY	TP
WATER OBSERVATION <u>Not Encountered</u>		DATE EXCAVATED	<u>6/5/2018</u>

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — —	8" Topsoil	
1 — —	Brown Silty CLAY, little coarse to fine Sand	Medium Stiff
2 — —		
3 — —		
4 — —	Gray-brown coarse to fine SAND, some coarse to fine Gravel, some Silt with occasional Boulders	Medium Dense
5 — —		
6 — —		
7 — —		
8 — —		
9 — —		
10 — —		
11 — —	TEST PIT COMPLETE AT 15± FEET	
12 — —		
13 — —		
14 — —		

SESI CONSULTING ENGINEERS D.P.C.

Fig. 47

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	V10
LOCATION	See Figure 1	APPROX. ELEV.	290.4±	INSPECTED BY	TP
WATER OBSERVATION	Not Encountered			DATE EXCAVATED	6/5/2018
DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION			RELATIVE DENSITY OR CONSISTENCY	
0	Topsoil			Very Loose	
1					
2					
3	Brown coarse to fine SAND, little Silt, little medium to fine Gravel with occasional Boulders			Medium Dense	
4					
5					
6					
7					
8					
9	Gray-brown coarse to fine SAND, little coarse to fine Gravel, little Silt with occasional Boulders			Medium Dense	
10					
11					
12					
13					
14	TEST PIT COMPLETE AT 15± FEET				

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Fig. 48

PROJECT NO.	9065	PROJECT	Purchase NY	TEST PIT NO.	V12
LOCATION	See Figure 1	APPROX. ELEV.	307.0±	INSPECTED BY	TP
WATER OBSERVATION	Seepage @ 11'±			DATE EXCAVATED	6/5/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 — — 2 — —	8" Topsoil	Very Loose
3 — — 4 — — 5 — —	Orange-brown/gray-brown Silty CLAY, little coarse to fine Sand, trace Gravel	Medium Stiff
6 — — 7 — — 8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Gray-brown Clayey SILT, some medium to fine Sand, little coarse to fine Gravel with occasional Cobbles	Medium Stiff
TEST PIT COMPLETE AT 15± FEET		

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Fig. 49

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	V13
LOCATION	See Figure 1	APPROX. ELEV.	318.0±	INSPECTED BY	TP
WATER OBSERVATION			6.5±	DATE EXCAVATED	6/7/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 —	6" Topsoil	Very Loose
1 —	Fill: Black Clayey Silt, some coarse to fine Gravel, little coarse to fine Sand, with Wood, Plastic, Fabric, Metal, Organics and Boulders	Medium Stiff
2 —		
3 —		
4 —		
5 —	1.5' Concrete	
6 —	Fill: Black Clayey Silt, some coarse to fine Gravel, little coarse to fine Sand, with Wood, Plastic, Fabric, Metal, Organics and Boulders	Medium Stiff
7 —		
8 —		
9 —	TEST PIT COMPLETE AT 9± FEET (heavy seepage)	
10 —		
11 —		
12 —		
13 —		
14 —		

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Fig. 50

PROJECT NO.	9065	PROJECT	Purchase, NY	TEST PIT NO.	V14
LOCATION	See Figure 1	APPROX. ELEV.	309.9±	INSPECTED BY	TP
WATER OBSERVATION	Seepage @ 6'±			DATE EXCAVATED	6/7/2018

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 — —	1.5' Topsoil	Very Loose
2 — — 3 — —	2' Concrete	
4 — — 5 — — 6 — — 7 — — 8 — — 9 — — 10 — — 11 — — 12 — —	Fill: Black Silt, some coarse to fine Sand, some coarse to fine Gravel, with Metal, Wood, Concrete, Organics and Brick	Medium Stiff
13 — — 14 —	Gray-brown medium to fine Sand and coarse to fine Gravel, some Silt with occasional Boulders and Cobbles	Medium Dense
TEST PIT COMPLETE AT 15.5± FEET		

SESI CONSULTING ENGINEERS D.P.C.

Fig. 51

Definitions of Identification Terms for Granular Soils

Our experience has shown that the following field identification system, which is patterned somewhat after the Burmister System, permits a more detailed breakdown of the components within a soil sample than other identification systems allow. It also compels the supervising technician to examine a sample quite closely in order to accurately describe the components within the sample.

Principal Component (All Capitalized)

- GRAVEL More than 50% of the sample by weight is Gravel
- SAND More than 50% of the sample by weight is Sand
- SILT More than 50% of the sample by weight is Silt

Minor Component (Proper Case)

- Gravel Less than 50% of the sample by weight is Gravel
- Sand Less than 50% of the sample by weight is Sand
- Silt Less than 50% of the sample by weight is Silt

Proportion Terms

- and Component ranges from 35% to 50% of the sample by weight
- some Component ranges from 20% to 35% of the sample by weight
- little Component ranges from 10% to 20% of the sample by weight
- trace Component ranges from 0% to 10% of the sample by weight

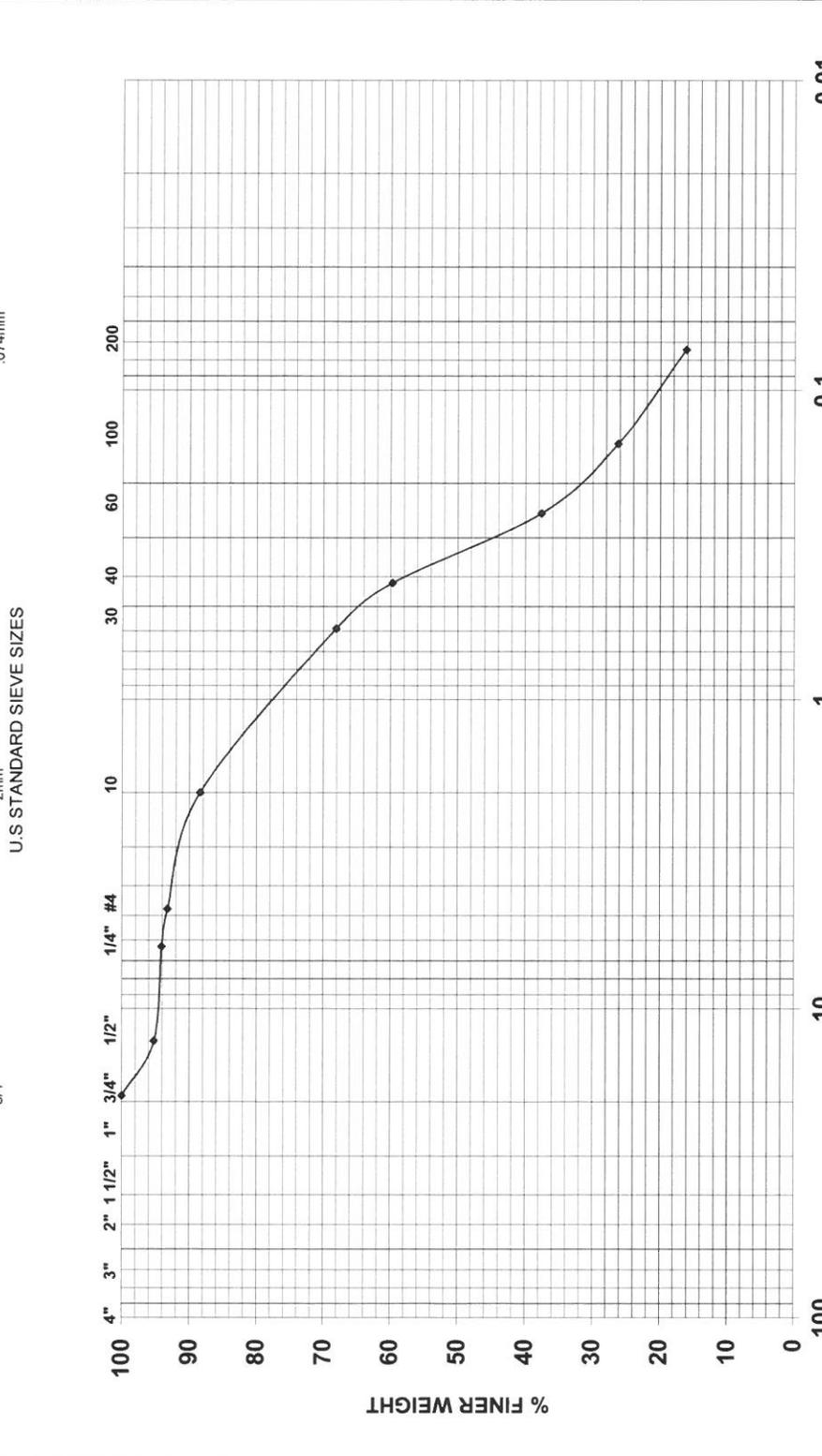
Size of Soil Components

- Gravel
 - Coarse gravel ranges from 3 inches to 1 inch
 - Medium gravel ranges from 1 inch to 3/8 inch
 - Fine gravel ranges from 3/8 inch to No. 10 sieve
- Sand
 - Coarse sand ranges from No. 10 sieve to No. 30 sieve
 - Medium sand ranges from No. 30 sieve to No. 60 sieve
 - Fine sand ranges from No. 60 sieve to No. 200 sieve
- Silt
 - Material which passes the No. 200 sieve
- Clay
 - Material which passes the No. 200 sieve
 - Exhibits varying degrees of plasticity

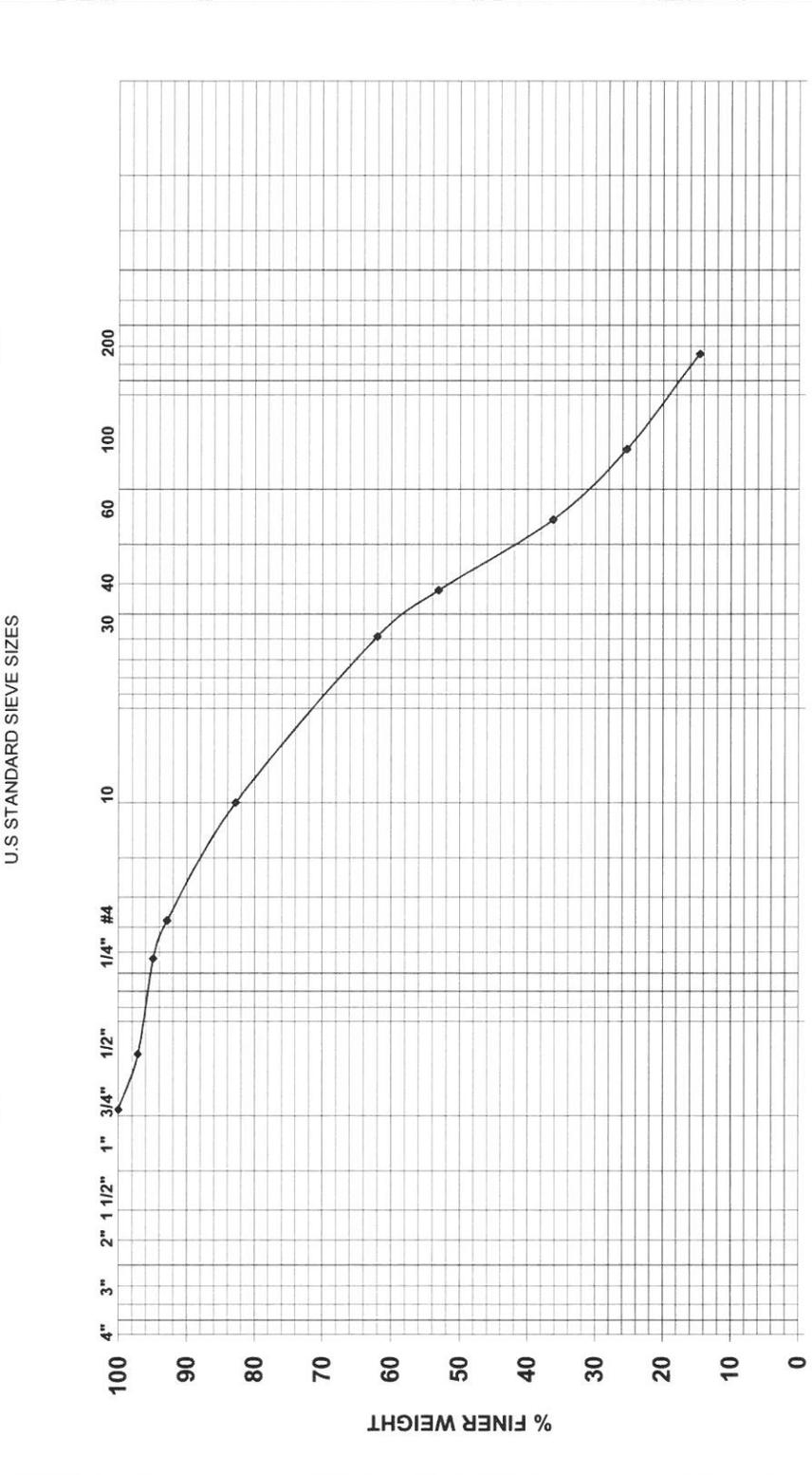
Gradation Designations

- Coarse to fine (c-f) All fractions greater than 10% of the component
- Coarse to medium (c-m) Less than 10% of the component is fine
- Medium to fine (m-f) Less than 10% of the component is coarse
- Coarse (c) Less than 10% of the component is medium and fine
- Medium (m) Less than 10% of the component is coarse and fine
- Fine (f) Less than 10% of the component is coarse and medium

GRAVEL		SAND		SILT OR CLAY	
COARSE	MEDIUM	COARSE	MEDIUM	FINE	FINE
3/4"	2mm	0.074mm			



GRAVEL		SAND		SILT OR CLAY	
COARSE	FINE	COARSE	FINE	COARSE	FINE
3/4"	2mm	0.74mm			



Particle Size Sieve #	Percent Finer Than
3"	-
1 1/2"	-
1"	100.00
3/4"	97.15
1/2"	94.89
1/4"	92.89
4	82.82
10	62.01
30	53.11
40	36.25
60	25.34
100	14.65
200	14.65

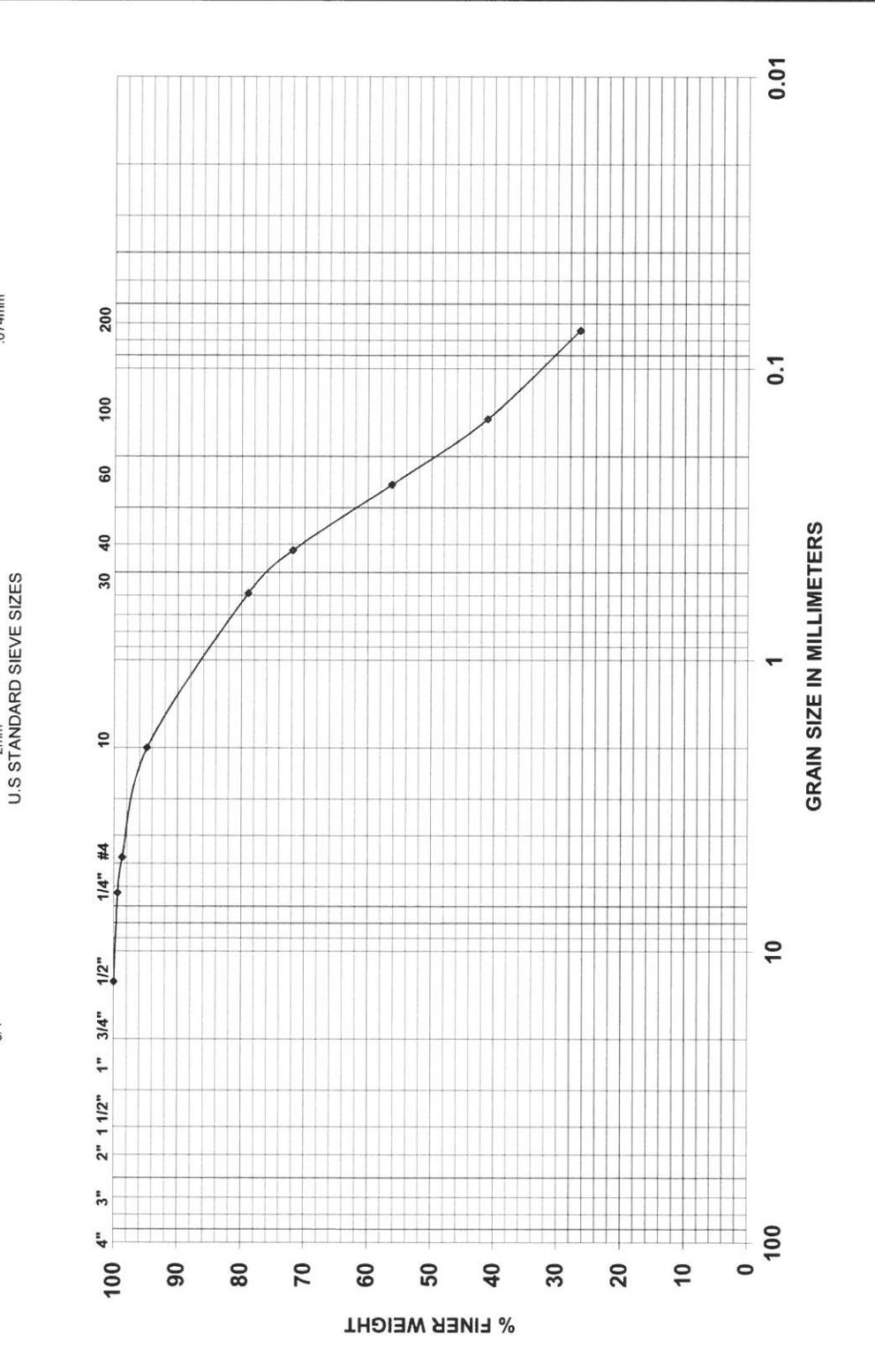
Symbol	IE4
Boring	S-4
Sample	10' - 12'
Depth	17.18
% +3"	68.18
% Gravel	14.65
% Sand	
% Fines	
% Silt	
% Clay	
Sp.G	
LL	
PL	
PI	
W (%)	11.7
Particle Size Sieve #	Percent Finer Than
3"	-
1 1/2"	-
1"	100.00
3/4"	97.15
1/2"	94.89
1/4"	92.89
4	82.82
10	62.01
30	53.11
40	36.25
60	25.34
100	14.65
200	14.65

Symbol	◆	■	▲
DESCRIPTION AND REMARKS	Brown coarse to fine SAND, some Silt, little fine Gravel		

CLIENT: DIVNEY-TUNG SCHWALBE, LLP
 PROJECT: SUNY Purchase
 DATE: June 27, 2018
 JOB NO.: 9065 FIGURE No. 54



GRAVEL		SAND			SILT OR CLAY	
COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE	
3/4"		2mm			.074mm	



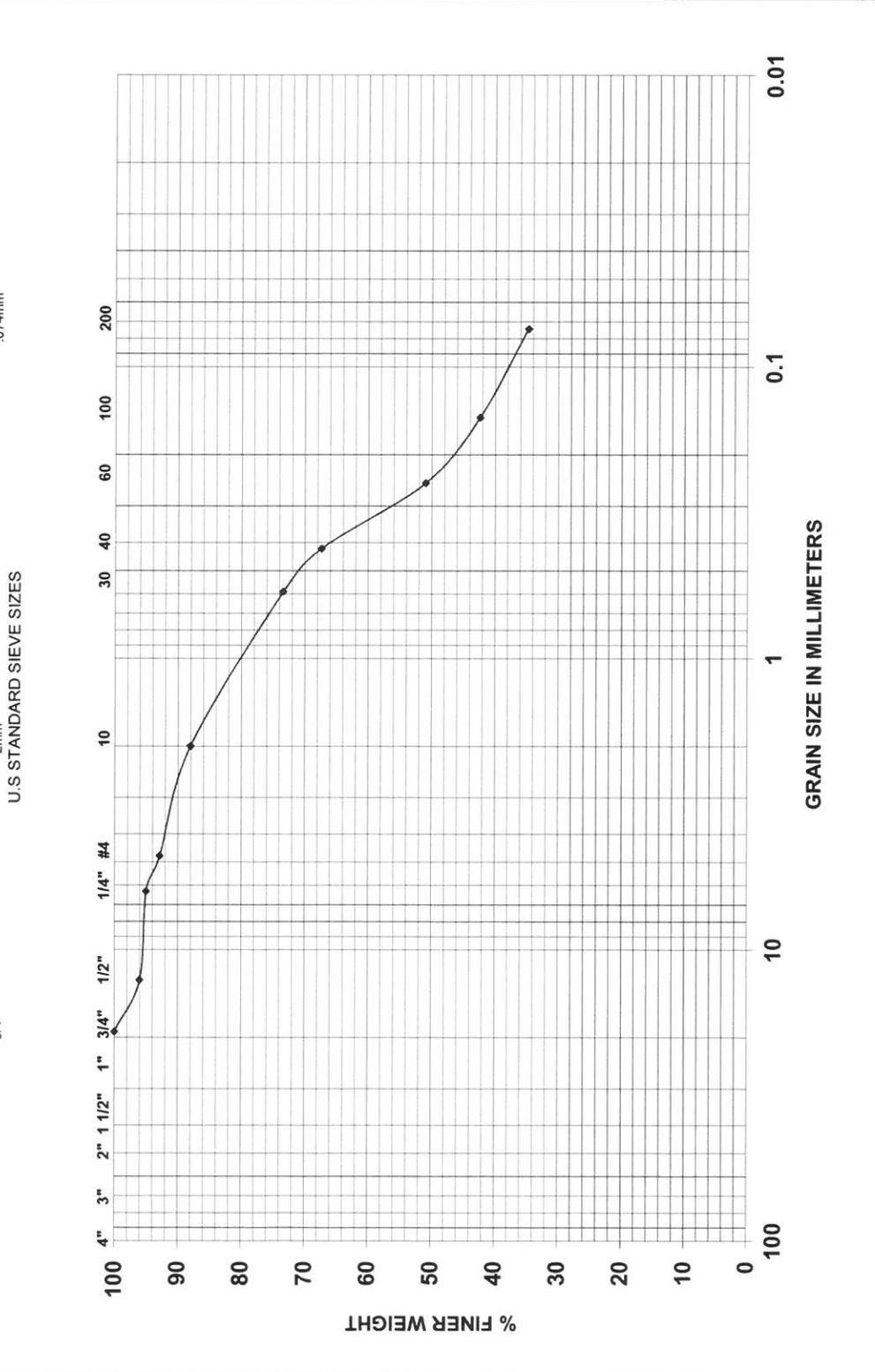
Symbol	◆	■	▲
Boring	IE7		
Sample	S-3		
Depth	2'-4"		
% +3"			
% Gravel	5.2		
% Sand	68.3		
% Fines	26.5		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	9.2		
Particle Size	Percent Finer Than		
Sieve #			
3"	-		
1 1/2"	-		
1"	-		
3/4"	-		
1/2"	100.00		
1/4"	99.39		
4	98.70		
10	94.81		
30	78.96		
40	71.86		
60	56.28		
100	41.13		
200	26.49		

PARTICLE SIZE DISTRIBUTION
 CLIENT: DIVNEY-TUNG SCHWALBE, LLP
 PROJECT: SUNY Purchase
 DATE: June 29, 2018
 JOB NO.: 9065 FIGURE No 55

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine SAND, some Silty Clay, trace Gravel
■	
▲	



GRAVEL		SAND		SILT OR CLAY	
COARSE	MEDIUM	COARSE	MEDIUM	FINE	FINE
3/4"	2mm	2mm	0.074mm		



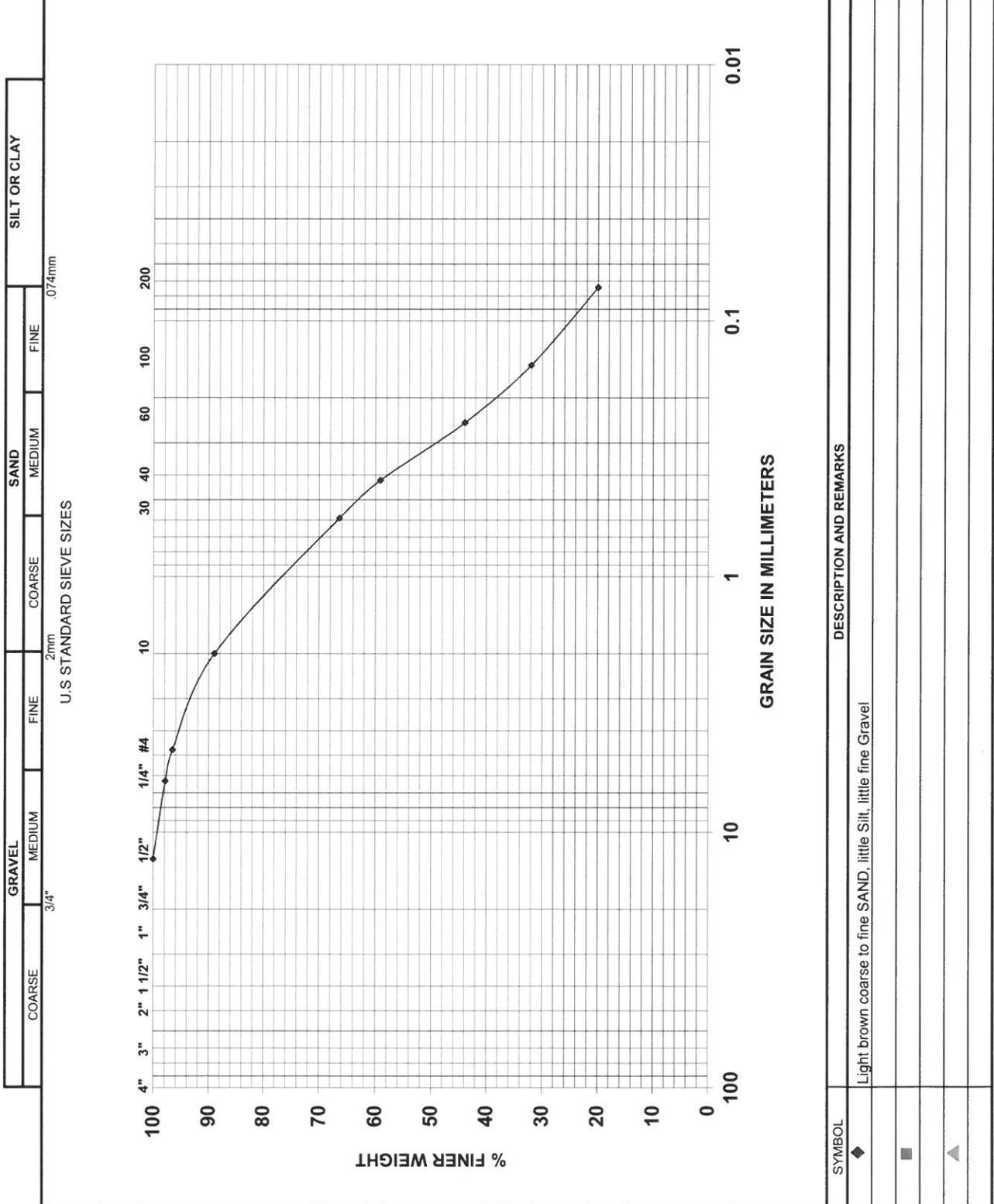
Symbol	◆	■	▲
Boring	IW1		
Sample	S-1		
Depth	0' - 2'		
% +3"			
% Gravel	11.94		
% Sand	53.29		
% Fines	34.77		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	12		
Particle Size	Percent Finer Than		
Sieve #			
3"	-		
1 1/2"	-		
1"	-		
3/4"	100.00		
1/2"	96.02		
1/4"	95.01		
4	92.89		
10	88.06		
30	73.41		
60	67.41		
100	50.96		
200	42.41		
200	34.77		

PARTICLE SIZE DISTRIBUTION
 CLIENT: DIVNEY-TUNG SCHWALBE, LLP
 PROJECT: SUNY Purchase
 DATE: June 27, 2018
 JOB NO.: 9065 FIGURE No 56

SYMBOL	DESCRIPTION AND REMARKS
◆	Brown coarse to fine SAND, some Silt, little fine Gravel
■	
▲	



Symbol	◆	■	▲
Boring	IW-4		
Sample	S-1		
Depth	0' - 2'		
% +3"			
% Gravel	11.02		
% Sand	69.00		
% Fines	19.98		
% Silt			
% Clay			
Sp.G			
LL			
PL			
PI			
W (%)	11.9		
Particle Size	Percent Finer Than		
Sieve #			
3"	-		
1 1/2"	-		
1"	-		
3/4"	-		
1/2"	100.00		
1/4"	97.87		
4	96.58		
10	88.98		
30	66.41		
40	59.12		
60	43.92		
100	31.99		
200	19.98		
PARTICLE SIZE DISTRIBUTION			
CLIENT: DIVNEY-TUNG SCHWALBE, LLP			
PROJECT: SUNY Purchase			
DATE: June 27, 2018			
JOB NO. 9065 FIGURE No 57			



DESCRIPTION AND REMARKS

◆ Light brown coarse to fine SAND, little Silt, little fine Gravel



APPENDIX

PROJECT NO. <u>8306</u>	INSPECTED BY <u>JP</u>	STP-15
LOCATION <u>SEE PLAN</u>	APPROX. ELEV. <u>315±</u>	
WATER OBSERVATION <u>NOT ENCOUNTERED</u>	DATE EXCAVATED <u>11/7/2012</u>	

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0			
1			
2	FILL: Brown medium to fine Sand, and Silt, trace Gravel	0	
3			
4			
5			
6			
7			
8	FILL: Gray/Black clayey Silt, trace Sand, trace Gravel, peat, roots, organics NOTE: Organic odor present	0	
9			
10			
11			
12			
13			
14			
15	----- END OF TESTPIT @ 14.7+ BELOW GRADE		

NOTE:

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PROJECT NO. <u>8306</u>	INSPECTED BY <u>JP</u>	STP-16
LOCATION <u>SEE PLAN</u>	APPROX. ELEV. <u>320±</u>	
WATER OBSERVATION <u>NOT ENCOUNTERED</u>	DATE EXCAVATED <u>11/7/2012</u>	

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0	FILL: Brown medium to fine Sand, some Silt, little coarse to fine Gravel	0	
1			
2			
3			
4	FILL: Gray/Black clayey Silt, trace Sand, trace Gravel, peat, roots, organics NOTE: Organic odor present Organic Content= 3.0% (-200)= 53.8% W.C.= 47.2%	0	
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15	END OF TESTPIT @ 15'± BELOW GRADE		

NOTE:

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PROJECT NO. <u>8306</u>	INSPECTED BY <u>JP</u>	STP-17
LOCATION <u>SEE PLAN</u>	APPROX. ELEV. <u>312±</u>	
WATER OBSERVATION <u>NOT ENCOUNTERED</u>	DATE EXCAVATED <u>11/7/2012</u>	

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0	Topsoil	0	
1	FILL: Light Brown/Tan coarse to fine SAND, little Silt, little coarse to fine Gravel	0	
2			
3			
4	FILL: Gray/Black clayey Silt, little coarse to fine Sand, trace Gravel, peat, roots, organics NOTE: Organic odor present	0	
5			
6			
7			
8			
9			
10	END OF TESTPIT @ 13.5'+ BELOW GRADE		
11			
12			
13			
14			

NOTE:

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PROJECT NO. 8306

INSPECTED BY JP

STP-21

LOCATION SEE PLAN

APPROX. ELEV. 316±

WATER OBSERVATION NOT ENCOUNTERED

DATE EXCAVATED 11/7/2012

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0	Topsoil	0	
1			
2			
3	FILL: Concrete, asphalt, wire with Light Brown/Tan coarse to fine SAND, some coarse to fine Gravel, little Silt, boulders, cobbles	0	
4			
5			
6			
7	Refusal @ 6.5'± below grade on concrete END OF TESTPIT @ 6.5'± BELOW GRADE		
8			
9			
10			
11			
12			
13			
14			

NOTE:

PROJECT NO. 8306INSPECTED BY JP

STP-22

LOCATION SEE PLANAPPROX. ELEV. 310±

WATER OBSERVATION

8'± below grade

DATE EXCAVATED

11/7/2012

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0	Topsoil	0	
1			
2			
3	FILL: Concrete, wire with Brown coarse to fine SAND, little Silt, little coarse to fine Gravel	0	
4			
5			
6			
7			
8	NOTE: Perched groundwater condition @ 8'± below grade		
9			
10	FILL: Dark Brown/Black clayey Silt, little coarse to fine Sand, trace Gravel, organics	0	
11			
12			
13	Reddish-Brown/Gray coarse to fine Sand, and Silt, little medium to fine Gravel W.C.= 14.1%	0	
14	(-200)= 43.1%		
15	END OF TESTPIT @ 15'+ BELOW GRADE		

NOTE:

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Fig.

23

PROJECT NO. <u>8306</u>		INSPECTED BY <u>JP</u>	STP-23
LOCATION <u>SEE PLAN</u>		APPROX. ELEV. <u>315±</u>	
WATER OBSERVATION <u>NOT ENCOUNTERED</u>		DATE EXCAVATED <u>11/7/2012</u>	
DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0	Topsoil	0	
1			
2			
3			
4			
5	FILL: Brick, concrete, metal with Brown/Gray coarse to fine Sand, some coarse to fine Gravel, some Silt, cobbles	0	
6			
7			
8			
9			
10			
11			
12	END OF TESTPIT @ 12± BELOW GRADE		
13			
14			

NOTE:

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	PROJECT NAME:	SUNY Purchase			MONITORING WELL NO.	MW-1			
	PROJECT LOCATION:	Purchase, NY			JOB NO.	9065A			
					GROUND ELEVATION:				
BORING BY: AETI	DATE STARTED	6/13/16	DEVELOPMENT PERIOD		INSIDE CASING DIAMETER (in)				
INSPECTOR: MZ	DATE COMPLETED	6/13/16	DEVELOPMENT METHOD		BOREHOLE DIAMETER (in)				
NJ DEP PERMIT NO.:	DATE DEVELOPED	6/13/16	DEVELOPMENT RATE	# gpm	INITIAL WATER LEVEL (ft):				
WELL CONSTRUCTION	DEPTH (ft)	Sample	Blows on Spoon				REC (in)	SOIL DESCRIPTION AND STRATIFICATION	P.I.D.
			0/6	6/12	12/18	18/24			
Depth (feet below grade) Top of Casing # Ground Surface 0 Top of Riser # Top of Seal # Top of Sand Pack # Top of Screen # Bottom of Screen # Bottom of Boring # Remarks	0						FILL: Light brown/tan coarse to fine SAND, little root fibers, trace Silt, trace Gravel		
Casing Type:	5						Fill: Light brown/tan coarse to fine SAND, little Gravel, trace Silt, trace crushed rock		
Well Cap:							Tan/gray coarse to fine SAND, little Gravel, trace Silt (wet)		
Grout Type:							BORING COMPLETE AT 8± FEET		
Well Key:	10						INSTALL MONITORING WELL		
Riser Pipe:							Light brown Silty Clay		
Screen Size:	15						Quartz 10± feet of screen		
Sand/Gravel Pack Size:	20						DRILL TO 15± FEET		
	25								
	30								
	35								
	40								

Approximate Change in Strata: _____ Inferred Change in Strata: _____

The subsurface information shown hereon was obtained for the design and estimating purposes for our client. It is made available to authorized users only that they may have access to the same information available to our client. It is presented in good faith, but it is not intended as a substitute for investigations, interpretations or judgment of such authorized users. Information on the logs should not be relied upon without the geotechnical engineers recommendations contained in the report from which these logs were extracted. Soil descriptions represent a field identification after D. M. Burmister unless otherwise noted.

PROJECT NO. 9065 PROJECT SUNY Purchase TEST PIT NO. STP- 101
 LOCATION Purchase, NY APPROX. ELEV. ± INSPECTED BY DC
 WATER OBSERVATION _____ DATE EXCAVATED 6/13/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — 1 — 2 — 3 — 4	Fill: Coarse to fine SAND, tree roots, rocks and Gravel (15-20%)	
— 5 — 6 — 7	Fill: Coarse to fine SAND, rocks and Gravel (15-20%), concrete (10-15%), some brick, metal pipe (organic odor)	
8 — 9 — 10 — 11 — 12 — 13 — 14	Fill: coarse to fine SAND, rocks and Gravel (15-20%) concrete (10-15%), brick (5%), metal pipe, garden hose (organic odor)	

NOTE:

Fig.

PROJECT NO. 9065 PROJECT SUNY Purchase TEST PIT NO. STP-#101
 LOCATION Purchase, NY APPROX. ELEV. #± INSPECTED BY DC
 WATER OBSERVATION Not Encountered DATE EXCAVATED 6/13/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
15 — —		
16 — —	Dark brown fine SAND, trace Clay	
17 — —	TEST PITT COMPLETED AT 16.5± FEET	
18 — —		
19 — —		
20 — —		
21 — —		
22 — —		
23 — —		
24 — —		
25 — —		
26 — —		
27 — —		
28 — —		
29 — —		

NOTE:

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Fig. #

PROJECT NO. <u>9065</u>	PROJECT <u>SUNY Purchase</u>	TEST PIT NO.	STP- 102
LOCATION <u>Purchase, NY</u>	APPROX. ELEV. <u>±</u>	INSPECTED BY	<u>DC</u>
WATER OBSERVATION _____		DATE EXCAVATED	<u>6/13/2016</u>

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 — — 2 — — 3 — — 4 — —	Fill: Coarse to fine SAND, tree roots, rocks (15-20%)	
5 — — 6 — — 7 — —	Fill: Coarse to fine SAND, rocks (15-20%), concrete, (10-15%), some brick, metal pipe (organic odor)	
8 — — 9 — — 10 — — 11 — — 12 — — 13 — — 14 —	Fill: Coarse to fine SAND, rocks (15-20%), concrete (10-15%), brick (5%), metal pipe, garden hose (organic odor)	

NOTE:

Fig.

PROJECT NO. 9065 PROJECT SUNY Purchase TEST PIT NO. STP-#102
 LOCATION Purchase, NY APPROX. ELEV. #± INSPECTED BY DC
 WATER OBSERVATION Not Encountered DATE EXCAVATED 6/13/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	RELATIVE DENSITY OR CONSISTENCY
15 — —		
16 —	Dark brown fine SAND, trace Clay	
17 —	TEST PITT COMPLETED AT 16.5± FEET	
18 —		
19 —		
20 —		
21 —		
22 —		
23 —		
24 —		
25 —		
26 —		
27 —		
28 —		
29 —		

NOTE:

SESI CONSULTING ENGINEERS

Fig. #

PROJECT NO. <u>9065</u>	INSPECTED BY <u>SUNY Purchase</u>	TEST PIT NO.	STP-#110
LOCATION <u>Purchase NY</u>	APPROX. ELEV. _____	INSPECTED BY <u>DC</u>	
WATER OBSERVATION _____		DATE EXCAVATED <u>6/14/2016</u>	

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0 — — 1 — — 2 —	Fill: Coarse to fine SAND, rocks and Gravel (10%)		
3 — — 4 — — 5 — — 6 —	Fill: Coarse to fine SAND, rocks and Gravel (15%), brick (5%)		
7 — — 8 — — 9 —	Fill: Coarse to fine SAND, rocks and Gravel (20-25%)		
10 — — 11 — — 12 — — 13 — — 14 —	TEST PITT COMPLETE AT 9.5± FEET		

NOTE:

Fig.

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PROJECT NO. 9065

INSPECTED BY SUNY Purchase

TEST PIT NO.

STP-#111

LOCATION Purchase NY

APPROX. ELEV. _____

INSPECTED BY

DC

WATER OBSERVATION _____

DATE EXCAVATED

6/14/2016

DEPTH FT.	DESCRIPTION / SOIL CLASSIFICATION	PID	RELATIVE DENSITY OR CONSISTENCY
0 — 1	Brown fine to medium SAND, rock (5%)		
2 — 3 — 4 — 5	Fill: Brown fine to medium SAND, rocks and Gravel (35-30%), trace brick and wood		
6 — 7 — 8 — 9 — 10 — 11 — 12 — 13 — 14	TEST PITT COMPLETE AT 6± FEET		

NOTE:

Fig. _____

SESI CONSULTING ENGINEERS PC

SESI

DOCUMENT 00 60 00

PROJECT FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

- A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:
 - 1. AIA Document A133-2009 "Standard Form of Agreement between Owner and Construction Manager as Constructor Where the Basis of Payment is the Cost of the Work Plus a Fee with a Guaranteed Maximum Price."
 - a. The General Conditions for Project are AIA Document A201-2017 "General Conditions of the Contract for Construction."

1.2 ADMINISTRATIVE FORMS

- A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.
- B. Copies of AIA standard forms may be obtained from the American Institute of Architects; www.aiacontractdocsaiacontracts.org; (800) 942-7732.
- C. Preconstruction Forms:
 - 1. Form of Performance Bond and Labor and Material Bond: AIA Document A312-2010 "Performance Bond and Payment Bond."
 - 2. Form of Certificate of Insurance: AIA Document G715-2017 "Supplemental Attachment for ACORD Certificate of Insurance 25."
- D. Information and Modification Forms:
 - 1. Form of Request for Proposal: AIA Document G709-2018 "Proposal Request."
 - 2. Change Order Form: AIA Document G701-2017 "Change Order."
 - 3. Form of Architect's Memorandum for Minor Changes in the Work: AIA Document G710-2017 "Architect's Supplemental Instructions."
 - 4. Form of Change Directive: AIA Document G714-2017 "Construction Change Directive."
- E. Payment Forms:
 - 1. Schedule of Values Form: AIA Document G703-1992 "Continuation Sheet."
 - 2. Payment Application: AIA Document G702-1992/703-1992 "Application and Certificate for Payment and Continuation Sheet."
 - 3. Form of Contractor's Affidavit: AIA Document G706-1994 "Contractor's Affidavit of Payment of Debts and Claims."
 - 4. Form of Affidavit of Release of Liens: AIA Document G706A-1994 "Contractor's Affidavit of Payment of Release of Liens."
 - 5. Form of Consent of Surety: AIA Document G707-1994 "Consent of Surety to Final Payment."

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 00 60 00

SPECIFICATIONS GROUP

General Requirements Subgroup

DIVISION 01 - GENERAL REQUIREMENTS

01 10 00	SUMMARY
01 25 00	SUBSTITUTION PROCEDURES ATTACHMENT: REQUEST FOR SUBSTITUTION FORM
01 26 00	CONTRACT MODIFICATION PROCEDURES
01 29 00	PAYMENT PROCEDURES
01 31 00	PROJECT MANAGEMENT AND COORDINATION ATTACHMENT: DIGITAL INFORMATION RELEASE AGREEMENT FORM
01 32 00	CONSTRUCTION PROGRESS DOCUMENTATION
01 32 33	PHOTOGRAPHIC DOCUMENTATION
01 33 00	SUBMITTAL PROCEDURES
01 40 00	QUALITY REQUIREMENTS
01 42 00	REFERENCES
01 43 39	MOCKUPS
01 50 00	TEMPORARY FACILITIES AND CONTROLS
01 50 01	MAINTENANCE AND PROTECTION OF TRAFFIC
01 56 39	TEMPORARY TREE AND PLANT PROTECTION
01 60 00	PRODUCT REQUIREMENTS
01 73 00	EXECUTION
01 74 19	CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL
01 77 00	CLOSEOUT PROCEDURES
01 78 23	OPERATION AND MAINTENANCE DATA
01 78 39	PROJECT RECORD DOCUMENTS
01 79 00	DEMONSTRATION AND TRAINING
01 81 12	SUSTAINABLE REQUIREMENTS

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SECTION 01 10 00

SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Owner-furnished/Contractor-installed (OFI) products.
4. Contractor's use of site and premises.
5. Coordination with occupants.
6. Work restrictions.
7. Specification and Drawing conventions.

- B. Related Requirements:

1. Section 01 50 00 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.3 PROJECT INFORMATION

- A. Project Identification: Broadview Senior Living at Purchase College - Independent Living, Assisted Living/Memory Care, & Commons; HCM Project No. 215042.00.

1. Project Location: 735 Anderson Hill Road, Purchase, New York 10577.

- B. Owner: College Advancement Corporation.

- C. Architect: HCM Design, Inc., 700 E. Pratt Street, Suite 1200, Baltimore, MD 21202; ph.: 410-837-7311.

- D. Web-Based Project Software: Project software administered by Architect will be used for purposes of managing communication and documents during the construction stage.

1. See Section 01 31 00 "Project Management and Coordination." for requirements for using web-based Project software.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

- A. The Work of Project is defined by the Contract Documents and includes, but is not limited to, the following:

1. The Project consists of the construction of three separate parts:
 - a. A 176 Unit, four story R-2 Independent Living Apartment Building on top of a S-2 enclosed parking garage of Type IIA Construction.
 - b. A 39,270 sf two-story Commons Building (A-2) of Type IIA Construction.
 - c. An Assisted Living and Memory Care, two story building of Type IIA Construction with 36 assisted living units and 32 memory care units.

- B. Type of Contract: Project will be constructed under a single prime contract based on the cost of the Work plus a fee with a guaranteed maximum price as described in the Contract.

1.5 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCTS

- A. Owner's Responsibilities: Owner will furnish products indicated and perform the following, as applicable:
 1. Provide to Contractor Owner-reviewed Product Data, Shop Drawings, and Samples.
 2. Provide for delivery of Owner-furnished products to Project site.
 3. Upon delivery, inspect, with Contractor present, delivered items.
 - a. If Owner-furnished products are damaged, defective, or missing, arrange for replacement.
 4. Obtain manufacturer's inspections, service, and warranties.
 5. Inform Contractor of earliest available delivery date for Owner-furnished products.

- B. Contractor's Responsibilities: The Work includes the following, as applicable:
 1. Designate delivery dates of Owner-furnished products in Contractor's construction schedule, utilizing Owner-furnished earliest available delivery dates.
 2. Review Owner-reviewed Product Data, Shop Drawings, and Samples, noting discrepancies and other issues in providing for Owner-furnished products in the Work.
 3. Receive, unload, handle, store, protect, and install Owner-furnished products.
 4. Make building services connections for Owner-furnished products.
 5. Protect Owner-furnished products from damage during storage, handling, and installation and prior to Substantial Completion.
 6. Repair or replace Owner-furnished products damaged following receipt.

- C. Owner-Furnished/Contractor-Installed (OFCI) Products:
 1. Dog park and associated work.

1.6 CONTRACTOR'S USE OF SITE AND PREMISES

- A. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

- B. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.7 COORDINATION WITH OCCUPANTS

- A. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.
 1. Architect will prepare a Certificate of Substantial Completion for each specific portion of the Work to be occupied prior to Owner acceptance of the completed Work.
 2. Obtain a Certificate of Occupancy from authorities having jurisdiction before limited Owner occupancy.
 3. Before limited Owner occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will operate and maintain mechanical and electrical systems serving occupied portions of Work.
 4. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied portions of Work.

1.8 WORK RESTRICTIONS

- A. Comply with Owner's restrictions on construction operations.
 1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging for temporary utility services according to requirements indicated:
 1. Notify Owner not less than two days in advance of proposed utility interruptions.
 2. Obtain Owner's written permission before proceeding with utility interruptions.
- C. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.
 1. Notify Owner not less than two days in advance of proposed disruptive operations.
 2. Obtain Owner's written permission before proceeding with disruptive operations.
- D. Smoking and Controlled Substance Restrictions: Use of tobacco products, alcoholic beverages, and other controlled substances on Owner's property is not permitted.
- E. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

- F. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
 - 1. Maintain list of approved screened personnel with Owner's representative.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
 - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.
- C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- D. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:
 - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
 - 2. Abbreviations: Materials and products are identified by abbreviations scheduled on Drawings and published as part of the U.S. National CAD Standard.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 10 00

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.
- B. Related Requirements:
 - 1. Section 01 21 00 "Allowances" for products selected under an allowance.
 - 2. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
 - 1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required to meet other Project requirements but may offer advantage to Contractor or Owner.
 - 3. The following are not considered to be requests for substitutions:
 - a. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - b. Revisions to the Contract Documents requested by the Owner or Architect.
 - c. Specified options of products and construction methods included in the Contract Documents.
 - d. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Submit documentation identifying product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Substitution Request Form: Use form provided in Project Manual.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
 - b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. Certificates and qualification data, where applicable or requested.
 - g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
 - h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
 - i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES or another model code organization acceptable to authorities having jurisdiction.
 - j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
 - k. Cost information, including a proposal of change, if any, in the Contract Sum.
 - l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
 - m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.
 - a. The Owner, after evaluation of the submitted documentation and advisement by the Architect, will decide whether to consider or reject a request for substitution.
 - b. Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any proposed substitution.
 - c. Architect will record time required by Architect and Architect's consultants in evaluating substitutions proposed by Contractor and in making changes in the Contract Documents occasioned thereby. Whether or not Architect accepts proposed substitution, Contractor shall reimburse Owner for the charges of Architect and Architect's consultants for evaluating each proposed substitution.
 - d. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

- e. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

- A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

- 1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- b. Requested substitution provides sustainable design characteristics that specified product provided for compliance with specified sustainable design requirements.
- c. Substitution request is fully documented and properly submitted.
- d. Requested substitution will not adversely affect Contractor's construction schedule.
- e. Requested substitution has received necessary approvals of authorities having jurisdiction.
- f. Requested substitution is compatible with other portions of the Work.
- g. Requested substitution has been coordinated with other portions of the Work.
- h. Requested substitution provides specified warranty.
- i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

- B. Substitutions for Convenience: Not allowed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

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REQUEST FOR SUBSTITUTION FORM
Attachment to Section 01 25 00 Substitution Procedures

1. Date: _____ Request No: _____

2. Project Name: **Broadview Senior Living at Purchase College – Independent Living, Assisted Living/Memory Care, & Commons; HCM Project No. 215042.00**

3. Specification Reference: _____

4. Description of specified product or system: _____

5. Trade name, model number, and name of proposed substitution: _____

6. What effect does substitution have on applicable code requirements? _____

7. Differences between proposed substitution and specified item? *(if required, use attachment for additional space.)* _____

8. Manufacturer's warranty on proposed and specified items are:

Same

Different

(Explain on attachment)

9. Reason for requesting substitution: _____

10. Monetary considerations:

Specified Product \$ _____

Proposed Substitution \$ _____

11. Will the Undersigned pay for changes to the building design, including engineering and detailing

costs, caused by the requested substitution? Yes No

12. Enclosed data consists of:

Catalog Drawings Samples Tests Reports

13. List availability of maintenance service and replacement material

14. State effects of substitution on construction schedule and changes required in other work or product:

15. Any license fees or royalties: Yes No

UNDERSIGNED certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product-
- Same maintenance service and source of replacement parts as applicable is available.
- Proposed Substitution will not affect or delay Progress Schedule.
- Proposed Substitution will not have an adverse effect on specified sustainable design requirements for the Project.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived by the Contractor.
- Proposed substitution does not affect dimensions or functional clearances.
- Payment will be made for changes to building design, including architectural or engineering design, detailing, and construction costs caused by proposed substitution.
- Coordination, installation, and changes to the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:

For use by Owner

Signature _____

Accepted:

Accepted As Noted:

Firm _____

Not Accepted:

Received Too Late:

Address _____

Date _____

Date _____

Remarks: _____

Telephone _____

Approved by Contractor

By: _____

REQUEST FOR SUBSTITUTION
END OF FORM

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.
- B. Related Requirements:
 - 1. Section 01 25 00 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after the Contract award.

1.3 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Work Change Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Within seven days after receipt of Proposal Request or a duration negotiated previous, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change.
 - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 - e. Quotation Form: Use form acceptable to Owner and Architect.

- B. Contractor-Initiated Work Change Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include costs of labor and supervision directly attributable to the change.
 5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
 6. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 7. Work Change Proposal Request Form: Use form acceptable to Owner and Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Section 01 21 00 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

1.6 CHANGE ORDER PROCEDURES

- A. The Architect and Owner will review proposed Change Order requests prepared by the Contractor. When determined to be acceptable, the Architect and the Owner will each sign the Change Order to formally authorize the change.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

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SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Requirements:
 - 1. Section 01 21 00 "Allowances" for procedural requirements governing the handling and processing of allowances.
 - 2. Section 01 26 00 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 3. Section 01 32 00 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.
 - 1. Coordinate line items in the schedule of values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms with continuation sheets.
 - b. Submittal schedule.
 - c. Items required to be indicated as separate activities in Contractor's construction schedule.
 - 2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
 - 3. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.

- B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.
1. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Owner's name.
 - c. Name of Architect.
 - d. Architect's Project number.
 - e. Contractor's name and address.
 - f. Date of submittal.
 2. Arrange the schedule of values in tabular form, with separate columns to indicate the following for each item listed:
 - a. Related Specification Section or division.
 - b. Description of the Work.
 - c. Name of subcontractor.
 - d. Name of manufacturer or fabricator.
 - e. Name of supplier.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.
 - 1) Labor.
 - 2) Materials.
 - 3) Equipment.
 3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.
 - a. Include separate line items under principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
 4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. If required, include evidence of insurance.
 6. Provide separate line items in the schedule of values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
 8. Overhead Costs, Proportional Distribution: Include total cost and proportionate share of general overhead and profit for each line item.
 9. Temporary Facilities: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.

10. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling five percent of the Contract Sum and subcontract amount.
11. Each item in the schedule of values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
12. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments, as certified by Architect and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Owner/Contractor Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.
 1. Submit draft copy of Application for Payment at least three days prior to due date for review by Architect.
- C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.
 1. Other Application for Payment forms proposed by the Contractor may be acceptable to Architect and Owner. Submit forms for approval with initial submittal of schedule of values.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.
 1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
 3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.
- E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
 2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
 3. Provide summary documentation for stored materials indicating the following:
 - a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
 - b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
 - c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.
- F. Transmittal: Submit three signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.
1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
 2. When an application shows completion of an item, submit conditional final or full waivers.
 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors.
 2. Schedule of values.
 3. Contractor's construction schedule (preliminary if not final).
 4. Products list (preliminary if not final).
 5. Sustainable design action plans.
 6. Submittal schedule.
 7. List of Contractor's staff assignments.
 8. List of Contractor's principal consultants.
 9. Copies of building permits.
 10. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
 11. Initial progress report.
 12. Report of preconstruction conference.
 13. Certificates of insurance and insurance policies.
 14. Performance and payment bonds.
 15. Data needed to acquire Owner's insurance.

- I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - a. Complete administrative actions, submittals, and Work preceding this application, as described in Section 01 77 00 "Closeout Procedures."
 2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 1. Evidence of completion of Project closeout requirements.
 2. Certification of completion of final punch list items.
 3. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 4. Updated final statement, accounting for final changes to the Contract Sum.
 5. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 6. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 7. AIA Document G707, "Consent of Surety to Final Payment."
 8. Evidence that claims have been settled.
 9. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
 10. Final liquidated damages settlement statement.
 11. Proof that taxes, fees, and similar obligations are paid.
 12. Waivers and releases.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 29 00

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SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project, including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. RFIs.
4. Digital project management procedures.
5. Web-based Project management software package.
6. Project meetings.

- B. Related Requirements:

1. Section 01 32 00 "Construction Progress Documentation" for preparing and submitting Contractor's construction schedule.
2. Section 01 73 00 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
3. Section 01 77 00 "Closeout Procedures" for coordinating closeout of the Contract.
4. Section 01 81 13 "Sustainable Design Requirements" for sustainable design requirements for the Project.

1.3 DEFINITIONS

- A. Coordination Drawings: Drawings, usually prepared by or for the Contractor, to show how multiple-system and interdisciplinary work will be coordinated. These drawings are used by the Contractor and subcontractors to avoid coordination problems that can occur in the field when one subcontractor installs work before another subcontractor does without fully understanding the implications and restrictions the work may have on space requirements for subsequently installed work.

- B. RFI (Request for Interpretation): Request, initiated either by the Owner or the Contractor, asking for interpretation of an item in the Contract Documents.

1. Frivolous RFIs: A frivolous RFI is an RFI for which the answer is simply a reference to the Drawings or Specifications with no additional input required to clarify or answer the question.

1.4 INFORMATIONAL SUBMITTALS

- A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
 2. Number and title of related Specification Section(s) covered by subcontract.
 3. Drawing number and detail references, as appropriate, covered by subcontract.
- B. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses, cellular telephone numbers, and e-mail addresses. Provide names, addresses, and telephone numbers of individuals assigned as alternates in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, in web-based Project software directory, and in prominent location in each built facility. Keep list current at all times.

1.5 GENERAL COORDINATION PROCEDURES

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results, where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's construction schedule.
 2. Preparation of the schedule of values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.

6. Preinstallation conferences.
 7. Project closeout activities.
 8. Startup and adjustment of systems.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.
- E. Coordination for Sustainable Design Requirements and Sustainability Goals:
1. Contractor must coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. The Contractor must also provide manufacturer's product data, VOC limits, and other material content or manufacturing specification information as required and noted in subsequent Specification Sections.
 2. Include information on coordinating the following:
 - a. Waste management plan.
 - b. Construction indoor air quality plan.

1.6 COORDINATION DRAWINGS

- A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
 - a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
 - b. Coordinate the addition of trade-specific information to coordination drawings in a sequence that best provides for coordination of the information and resolution of conflicts between installed components before submitting for review.
 - c. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - d. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
 - e. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
 - f. Indicate required installation sequences.
 - g. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

- B. Coordination Drawing Organization: Organize coordination drawings as follows:
1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
 2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.
 3. Mechanical Rooms: Provide coordination drawings for mechanical rooms, showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
 4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
 5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
 6. Mechanical and Plumbing Work: Show the following:
 - a. Sizes and bottom elevations of ductwork, piping, and conduit runs, including insulation, bracing, flanges, and support systems.
 - b. Dimensions of major components, such as dampers, valves, diffusers, access doors, cleanouts and electrical distribution equipment.
 - c. Locations and dimensions of access doors and panels and relationship of panels to equipment requiring access for service and maintenance.
 - d. Fire-rated enclosures around ductwork.
 7. Electrical Work: Show the following:
 - a. Runs of vertical and horizontal conduit 1-1/4 inches in diameter and larger.
 - b. Light fixture, exit light, emergency battery pack, smoke detector, and other fire-alarm locations.
 - c. Panel board, switchboard, switchgear, transformer, busway, generator, and motor-control center locations.
 - d. Location of pull boxes and junction boxes, dimensioned from column center lines.
 8. Fire-Protection System: Show the following:
 - a. Locations of standpipes, mains piping, branch lines, pipe drops, and sprinkler heads.
 9. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.
 10. Coordination Drawing Prints: Prepare coordination drawing prints according to requirements in Section 01 33 00 "Submittal Procedures."
- C. Coordination Drawing Process: Prepare coordination drawings in the following manner:
1. Schedule submittal and review of Fire Sprinkler, Plumbing, HVAC, and Electrical Shop Drawings to make required changes prior to preparation of coordination drawings.

2. Commence routing of coordination drawing files with HVAC Installer, who will provide drawing plan files denoting approved ductwork. HVAC Installer will locate ductwork and piping on a single layer, using orange color. Forward drawings to Plumbing Installer.
3. Plumbing Installer will locate plumbing and equipment on a single layer, using blue color.
4. Fire Sprinkler Installer will locate piping and equipment, using red color. Fire Sprinkler Installer shall forward drawing files to Electrical Installer.
5. Electrical Installer will indicate service and feeder conduit runs and equipment in green color. Electrical Installer shall forward drawing files to Communications and Electronic Safety and Security Installer.
6. Communications and Electronic Safety and Security Installer will indicate cable trays and cabling runs and equipment in purple color. Communications and Electronic Safety and Security Installer shall forward completed drawing files to Contractor.
7. Contractor shall perform the final coordination review. As each coordination drawing is completed, Contractor will meet with Architect to review and resolve conflicts on the coordination drawings.

D. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Submittal Format: Submit or post coordination drawing files using PDF format.
2. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
 - a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
 - b. Digital Data Software Program: Drawings are available in AutoCAD.
 - c. Contractor shall execute a data licensing agreement in the form of Agreement included in this Project Manual.

1.7 REQUEST FOR INTERPRETATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Owner name.
3. Name of Architect.
4. Architect's Project number.
5. Date.
6. Name of Contractor.
7. RFI number, numbered sequentially.
8. RFI subject.
9. Specification Section number and title and related paragraphs, as appropriate.
10. Drawing number and detail references, as appropriate.
11. Field dimensions and conditions, as appropriate.

12. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 13. Contractor's signature certifying that the request has been researched in the Drawings and Specifications, and is not answered by the Contract Documents.
 14. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
 - a. Include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments on attached sketches.
- C. RFI Forms: CSI Form 13.2A, "Request for Interpretation" or software-generated form with substantially the same content as indicated above, acceptable to Architect.
1. Attachments shall be electronic files in PDF format.
- D. Architect's Action: Architect will review each RFI, determine action required, and respond. The Architect will respond to RFIs within an average of seven calendar days. It is acknowledged and understood that some RFIs will take longer to respond to than others dependent upon the complexity of the specific issue. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.
1. The following Contractor-generated RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for approval of Contractor's means and methods.
 - d. Requests for coordination information already indicated in the Contract Documents.
 - e. Requests for adjustments in the Contract Time or the Contract Sum.
 - f. Requests for interpretation of Architect's actions on submittals.
 - g. Incomplete RFIs or inaccurately prepared RFIs.
 - h. RFIs deemed by the Architect to be frivolous.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit a Work Change Proposal Request according to Section 01 26 00 "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 5 days of receipt of the RFI response.
- E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number, including RFIs that were returned without action or withdrawn.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.

8. Identification of related Minor Change in the Work, Construction Change Directive, and Work Change Proposal Request, as appropriate.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1.8 DIGITAL PROJECT MANAGEMENT PROCEDURES

A. Use of Architect's Digital Data Files: Digital data files of Architect's CAD drawings will be provided by Architect for Contractor's use during construction.

1. Digital data files may be used by Contractor in preparing coordination drawings, Shop Drawings, and Project Record Drawings.
2. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Contract Drawings.
3. Digital Drawing Software Program: Contract Drawings are available in AutoCAD.
4. Contractor shall execute a data licensing agreement in the form of Agreement included in Project Manual.

a. Subcontractors and other parties granted access by Contractor to Architect's digital data files shall execute a data licensing agreement in the form of Agreement included in this Project Manual.

5. The following digital data files will be furnished for each appropriate discipline:

- a. Floor plans.
- b. Reflected ceiling plans.

B. Web-Based Project Management Software Package: Use Architect's web-based Project management software package for purposes of hosting and managing Project communication and documentation until Final Completion.

1. Use the following web-based Project software package as provided and administered by the Architect:

a. Newforma, Inc.

2. Web-based Project management software includes, at a minimum, the following features:

- a. Compilation of Project data, including Contractor, subcontractors, Architect, Architect's consultants, Owner, and other entities involved in Project. Include names of individuals and contact information.
- b. Access control for each entity for each workflow process, to determine entity's digital rights to create, modify, view, and print documents.
- c. Document workflow planning, allowing customization of workflow between project entities.
- d. Creation, logging, tracking, and notification for Project communications required in other Specification Sections, including, but not limited to, RFIs, submittals, Minor Changes in the Work, Construction Change Directives, and Change Orders.
- e. Track status of each Project communication in real time, and log time and date when responses are provided.
- f. Procedures for handling PDFs or similar file formats, allowing markups by each entity. Provide security features to lock markups against changes once submitted.

- g. Processing and tracking of payment applications.
 - h. Processing and tracking of contract modifications.
 - i. Creating and distributing meeting minutes.
 - j. Document management for Drawings, Specifications, and coordination drawings, including revision control.
 - k. Management of construction progress photographs.
 - l. Mobile device compatibility, including smartphones and tablets.
3. At completion of Project, provide digital archive in format that is readable by common desktop software applications in format acceptable to Architect. Provide data in locked format to prevent further changes.
- C. PDF Document Preparation: Where PDFs are required to be submitted to Architect, prepare as follows:
1. Assemble complete submittal package into a single indexed file, incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
 2. Name file with submittal number or other unique identifier, including revision identifier.
 3. Certifications: Where digitally submitted certificates and certifications are required, provide a digital signature with digital certificate on where indicated.

1.9 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times a minimum of seven days prior to meeting.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.
1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Responsibilities and personnel assignments.
 - b. Tentative construction schedule.
 - c. Critical work sequencing and long lead items.
 - d. Designation of key personnel and their duties.
 - e. Lines of communications.
 - f. Use of web-based Project software.
 - g. Procedures for processing field decisions and Change Orders.
 - h. Procedures for RFIs.
 - i. Procedures for testing and inspecting.

- j. Procedures for processing Applications for Payment.
 - k. Distribution of the Contract Documents.
 - l. Submittal procedures.
 - m. Sustainable design requirements.
 - n. Preparation of Record Documents.
 - o. Use of the premises.
 - p. Work restrictions.
 - q. Working hours.
 - r. Owner's occupancy requirements.
 - s. Responsibility for temporary facilities and controls.
 - t. Procedures for moisture and mold control.
 - u. Procedures for disruptions and shutdowns.
 - v. Construction waste management and recycling.
 - w. Parking availability.
 - x. Office, work, and storage areas.
 - y. Equipment deliveries and priorities.
 - z. First aid.
 - aa. Security.
 - bb. Progress cleaning.
3. Minutes: Record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other Sections and when required for coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Owner and Architect of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Sustainable design requirements.
 - i. Review of mockups.
 - j. Possible conflicts.
 - k. Compatibility requirements.
 - l. Time schedules.
 - m. Weather limitations.
 - n. Manufacturer's written instructions.
 - o. Warranty requirements.
 - p. Compatibility of materials.
 - q. Acceptability of substrates.
 - r. Temporary facilities and controls.
 - s. Space and access limitations.
 - t. Regulations of authorities having jurisdiction.
 - u. Testing and inspecting requirements.
 - v. Installation procedures.
 - w. Coordination with other work.

- x. Required performance results.
 - y. Protection of adjacent work.
 - z. Protection of construction and personnel.
3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Project Closeout Conference: Schedule and conduct a project closeout conference, at a time convenient to Owner and Architect, but no later than 90 days prior to the scheduled date of Substantial Completion.
1. Conduct the conference to review requirements and responsibilities related to Project closeout.
 2. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the meeting. Participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Discuss items of significance that could affect or delay Project closeout, including the following:
 - a. Preparation of Record Documents.
 - b. Procedures required prior to inspection for Substantial Completion and for final inspection for acceptance.
 - c. Procedures for completing and archiving web-based Project software site data files.
 - d. Submittal of written warranties.
 - e. Requirements for preparing operations and maintenance data.
 - f. Requirements for delivery of material samples, attic stock, and spare parts.
 - g. Requirements for demonstration and training.
 - h. Preparation of Contractor's punch list.
 - i. Procedures for processing Applications for Payment at Substantial Completion and for final payment.
 - j. Submittal procedures.
 - k. Owner's partial occupancy requirements.
 - l. Installation of Owner's furniture, fixtures, and equipment.
 - m. Responsibility for removing temporary facilities and controls.
 4. Minutes: Record and distribute meeting minutes.
- E. Progress Meetings: Conduct progress meetings at biweekly intervals.
1. Coordinate dates of meetings with preparation of payment requests.
 2. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
 3. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

- a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Waste management update.
 - 5) Construction indoor air quality requirements.
 - 6) Deliveries.
 - 7) Off-site fabrication.
 - 8) Access.
 - 9) Site use.
 - 10) Temporary facilities and controls.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) Site safety.
 - 16) Status of RFIs.
 - 17) Status of Proposal Requests.
 - 18) Pending changes.
 - 19) Status of Change Orders.
 - 20) Pending claims and disputes.
 - 21) Documentation of information for payment requests.
4. Minutes: Record and distribute the meeting minutes to each party present and to parties requiring information.
- a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
- F. Coordination Meetings: Conduct Project coordination meetings at regular intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.
1. Attendees: Each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meetings shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to combined Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure

commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

- b. Schedule Updating: Revise combined Contractor's construction schedule after each coordination meeting, where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
 - c. Review present and future needs of each contractor present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site use.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of RFIs.
 - 14) Proposal Requests.
 - 15) Change Orders.
 - 16) Pending changes.
3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

DIGITAL INFORMATION RELEASE AGREEMENT

HCM Design, Inc.

Date:

Project:

**Broadview Senior
Living at Purchase
College –
Independent Living.
Assisted
Living/Memory Care
& Commons**

HCM Project No.: **215042.00**

The undersigned has requested access to design materials and related information (the "Materials") in electronic format which were prepared by, or in the process of being prepared by, HCM Design, Inc. (HCM) concerning the above referenced Project(s). The undersigned seeks access to the Materials for pricing and constructability review, and other uses. HCM is willing to permit access and use of the Materials, which access is expressly conditioned upon the following conditions.

Accordingly, the undersigned understands, acknowledges, and agrees:

1. That the Materials are prepared and stored on a computer system that may be vulnerable to latent defects, deficiencies, computer "viruses" and hidden software that could cause damage to the undersigned's own computer systems and business information.
2. The Materials comprise digital information which may be changed after the undersigned's receipt of the Materials. Electronic data, such as the Materials, stored on electronic media can deteriorate undetected and may be modified or altered without the knowledge of the undersigned or HCM. Further, HCM is under no obligation to correct, modify or update the Materials or to notify the undersigned of any need to correct, modify, or update the Materials.
3. The Materials may not be verified as compliant with all authorities having jurisdiction over the Project, and may be incomplete, may contain errors, and otherwise may not represent an accurate set of Materials required for the Project. Accordingly, the use of the Materials is wholly at the risk of the undersigned. Further, the use of Materials shall not in any way obviate the undersigned's responsibility for the proper checking and coordination of built conditions, dimensions, details, materials, sizes and quantities as required to facilitate complete and accurate pricing, fabrication and erection.
4. The Materials were generated utilizing commercial software (e.g. AutoCad, Revit) under license to HCM, and HCM is under no obligation to provide any software or hardware required to read and manipulate said information. HCM is also under no obligation to provide supplemental files, and linked data (e.g. font files, line types, or external references). The digital files to be provided for this project will be in _____ format as requested and as prepared by HCM.
5. The undersigned acknowledges the Materials are the property of HCM and its consultants or may be governed by HCM's contract concerning the Project. Accordingly, HCM neither owns nor controls the release of our consultants' digital files (i.e. MEP, structural, civil, etc.). This agreement does not constitute a transfer of ownership or copyright in the Materials or transfer or relinquishment of any rights to the intellectual properties contained in the Materials.

6. It is the sole discretion of HCM to determine the scope of any Materials which it may release and any costs for the same. The undersigned may use the documents and design only for the projects where HCM is the Architect for the above referenced project and only with our express written permission.
7. The undersigned agrees to indemnify, defend, release, and hold HCM, their consultants, and the Owner harmless from any responsibility or obligation as to the accuracy or completeness of the Materials and further waives any claim it may have for expenses, including but not limited to attorney's fees, resulting from the undersigned relying upon or utilizing the Materials.
8. The Materials files are provided for the exclusive use of the personnel of the undersigned ONLY. The information will not be transferred by the undersigned for use by others.

The above shall constitute the entire agreement between Hord Coplan Macht, Inc, and the undersigned for providing the undersigned permission to access and utilize the Materials for any and all purposes.

THIS AGREEMENT ACCEPTED BY:

Company: HCM Design, Inc.

Company:

Name:

Name:

Title:

Title:

Signature:

Signature:

SECTION 01 32 00

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Startup construction schedule.
2. Contractor's Construction Schedule.
3. Construction schedule updating reports.
4. Daily construction reports.
5. Material location reports.
6. Site condition reports.
7. Unusual event reports.

- B. Related Requirements:

1. Section 01 33 00 "Submittal Procedures" for submitting schedules and reports.
2. Section 01 40 00 "Quality Requirements" for submitting a schedule of tests and inspections.
3. Section 01 29 00 "Payment Procedures" for submitting a schedule of values.

1.3 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

1.4 INFORMATIONAL SUBMITTALS

- A. Format for Submittals: Submit required submittals in the following format:

1. PDF file.

- B. Startup construction schedule.

- C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.
- D. Construction Schedule Updating Reports: Submit with Applications for Payment.
- E. Daily Construction Reports: Submit at weekly intervals.
- F. Material Location Reports: Submit at monthly intervals.
- G. Site Condition Reports: Submit at time of discovery of differing conditions.
- H. Unusual Event Reports: Submit at time of unusual event.

1.5 QUALITY ASSURANCE

- A. Prescheduling Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to the preliminary construction schedule and Contractor's Construction Schedule, including, but not limited to, the following:
 - 1. Review software limitations and content and format for reports.
 - 2. Verify availability of qualified personnel needed to develop and update schedule.
 - 3. Discuss constraints, including work stages, interim milestones, and partial Owner occupancy.
 - 4. Review submittal requirements and procedures.
 - 5. Review time required for review of submittals and resubmittals.
 - 6. Review requirements for tests and inspections by independent testing and inspecting agencies.
 - 7. Review time required for Project closeout and Owner startup procedures.
 - 8. Review and finalize list of construction activities to be included in schedule.
 - 9. Review procedures for updating schedule.

1.6 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from entities involved.
 - 2. Coordinate each construction activity in the network with other activities, and schedule them in proper sequence.

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Computer Scheduling Software: Prepare schedules using current version of a program that has been developed specifically to manage construction schedules.

- B. Time Frame: Extend schedule from date established for the Notice of Award to date of Final Completion.
1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:
1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
 2. Temporary Facilities: Indicate start and completion dates for the following as applicable:
 - a. Securing of approvals and permits required for performance of the Work.
 - b. Temporary facilities.
 - c. Construction of mock-ups, prototypes and samples.
 - d. Owner interfaces and furnishing of items.
 - e. Interfaces with Separate Contracts.
 - f. Regulatory agency approvals.
 - g. Contractor's punch list.
 3. Procurement Activities: Include procurement process activities for the following long lead-time items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 4. Submittal Review Time: Include review and resubmittal times indicated in Section 01 33 00 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
 5. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
 6. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
 7. Contractor's Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
1. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Uninterruptible services.
 - b. Partial occupancy before Substantial Completion.
 - c. Use-of-premises restrictions.
 - d. Seasonal variations.
 - e. Anticipated weather conditions and potential delays.
 - f. Environmental control.
 2. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Subcontract awards.
 - b. Submittals.
 - c. Purchases.
 - d. Mockups.
 - e. Fabrication.

- f. Sample testing.
 - g. Deliveries.
 - h. Installation.
 - i. Tests and inspections.
 - j. Adjusting.
 - k. Curing.
 - l. Startup and placement into final use and operation.
3. Construction Areas: Identify each major area of construction for each major portion of the Work. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
- a. Structural completion.
 - b. Temporary enclosure and space conditioning.
 - c. Permanent space enclosure.
 - d. Completion of mechanical installation.
 - e. Completion of electrical installation.
 - f. Substantial Completion.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:
1. Unresolved issues.
 2. Unanswered RFIs.
 3. Rejected or unreturned submittals.
 4. Notations on returned submittals.
 5. Pending modifications affecting the Work and the Contract Time.
- G. Contractor's Construction Schedule Updating: At biweekly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Final Completion percentage for each activity.
- H. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.
- I. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their

assigned portion of the Work and are no longer involved in performance of construction activities.

1.8 STARTUP CONSTRUCTION SCHEDULE

- A. Gantt-Chart Schedule: Submit startup, horizontal, Gantt-chart-type construction schedule within seven days of date established for the Notice to Proceed.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 90 days of construction. Include skeleton diagram for the remainder of the Work and a cash requirement prediction based on indicated activities.

1.9 GANTT-CHART SCHEDULE REQUIREMENTS

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 30 days of date established for the Notice to Proceed.
 - 1. Base schedule on the startup construction schedule and additional information received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.10 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 - 1. List of subcontractors at Project site.
 - 2. Approximate count of personnel at Project site.
 - 3. Equipment at Project site.
 - 4. Material deliveries.
 - 5. High and low temperatures and general weather conditions, including presence of rain or snow.
 - 6. Testing and inspection.
 - 7. Accidents.
 - 8. Meetings and significant decisions.
 - 9. Unusual events.
 - 10. Stoppages, delays, shortages, and losses.
 - 11. Meter readings and similar recordings.
 - 12. Emergency procedures.
 - 13. Orders and requests of authorities having jurisdiction.
 - 14. Change Orders received and implemented.
 - 15. Construction Change Directives received and implemented.
 - 16. Services connected and disconnected.
 - 17. Equipment or system tests and startups.
 - 18. Partial completions and occupancies.

19. Substantial Completions authorized.

- B. Material Location Reports: At specified intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site. Indicate the following categories for stored materials:
 1. Material stored prior to previous report and remaining in storage.
 2. Material stored prior to previous report and since removed from storage and installed.
 3. Material stored following previous report and remaining in storage.

- C. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Interpretation. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

- D. Unusual Event Reports: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, responses by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.
 1. Submit unusual event reports directly to Owner within one day(s) of an occurrence. Distribute copies of report to parties affected by the occurrence.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 00

SECTION 01 32 33

PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Preconstruction photographs.
 - 2. Concealed Work photographs.
 - 3. Periodic construction photographs.
 - 4. Final Completion construction photographs.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting photographic documentation.
 - 2. Section 01 77 00 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.
 - 3. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 INFORMATIONAL SUBMITTALS

- A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.
- B. Digital Photographs: Submit image files within three days of taking photographs.
 - 1. Submit photos by uploading to web-based Project management software site. Include copy of key plan indicating each photograph's location and direction.
 - 2. Identification: Provide the following information with each image description in file metadata tag:
 - a. Name of Project.
 - b. Name and contact information for photographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date photograph was taken.
 - f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
 - g. Unique sequential identifier keyed to accompanying key plan.

1.4 CLOSEOUT SUBMITTALS

- A. Digital Photographs: Submit a CD-ROM or thumb-drive containing all of the digital photographs taken of the Work of this Project.

1.5 QUALITY ASSURANCE

- A. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

1.6 FORMATS AND MEDIA

- A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions.
 - 1. Field Office Images: Maintain one set of images accessible in the field office at Project site, available at all times for reference. Identify images in the same manner as those submitted to Architect.
- B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
- C. Metadata: Record accurate date and time and GPS location data from camera.
- D. File Names: Name media files with date, Project area, and sequential numbering suffix.

1.7 CONSTRUCTION PHOTOGRAPHS

- A. Photographer: Engage a qualified photographer to take construction photographs.
- B. General: Take photographs using the maximum range of depth of field, and that are in focus, to clearly show the Work. Photographs with blurry or out-of-focus areas will not be accepted.
 - 1. Maintain key plan with each set of construction photographs that identifies each photographic location.
- C. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Architect.
 - 1. Flag excavation areas before taking construction photographs.
 - 2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
 - 3. Take 20 photographs of existing buildings either on or adjoining property, to accurately record physical conditions at start of construction.
 - 4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

- D. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:
1. Underground utilities.
 2. Underslab services.
 3. Piping.
 4. Electrical conduit.
 5. Waterproofing and weather-resistant barriers.
- E. Periodic Construction Photographs: Take no less than 20 photographs monthly showing full scope of ongoing work. Select vantage points to show status of construction and progress since last photographs were taken. Document IAQ management precautions taken during construction operations. Document implementation of the erosion and sedimentation control plan as specified in Section 01 50 00 "Temporary Facilities and Controls."
1. Date stamp each photograph.
 2. Identify each photograph with an accurate description of the Work depicted.
 3. Identify each photograph as to actual location of picture relative to the Drawings.
- F. Final Completion Construction Photographs: Take at least 50 photographs after date of Substantial Completion for submission as Project Record Documents. Architect will inform photographer of desired vantage points.
1. Do not include date stamp.
- G. Additional Photographs: Architect may request photographs in addition to periodic photographs specified. Additional photographs will be paid for by Change Order and are not included in the Contract Sum.
1. Three days' notice will be given, where feasible.
 2. In emergency situations, take additional photographs within 24 hours of request.
 3. Circumstances that could require additional photographs include, but are not limited to, the following:
 - a. Special events planned at Project site.
 - b. Immediate follow-up when on-site events result in construction damage or losses.
 - c. Photographs shall be taken at fabrication locations away from Project site. These photographs are not subject to unit prices or unit-cost allowances.
 - d. Substantial Completion of a major phase or component of the Work.
 - e. Extra record photographs at time of final acceptance.
 - f. Owner's request for special publicity photographs.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 32 33

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SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Submittal schedule requirements.
- 2. Administrative and procedural requirements for submittals.

- B. Related Requirements:

- 1. Section 01 25 00 "Substitution Procedures" for administrative and procedural requirements for substitutions.
- 2. Section 01 29 00 "Payment Procedures" for submitting Applications for Payment and the schedule of values.
- 3. Section 01 31 00 "Project Management and Coordination" for submitting coordination drawings, subcontract list, key personnel names, meeting and conference minutes, and for requirements for use of web-based Project software.
- 4. Section 01 32 00 "Construction Progress Documentation" for submitting schedules and reports, including Contractor's construction schedule.
- 5. Section 01 32 33 "Photographic Documentation" for submitting construction photographs required during the execution of the Work.
- 6. Section 01 40 00 "Quality Requirements" for submitting test and inspection reports, and schedule of required tests and inspections.
- 7. Section 01 77 00 "Closeout Procedures" for submitting Project warranties, closeout submittals and maintenance material submittals.
- 8. Section 01 78 23 "Operation and Maintenance Data" for submitting operation and maintenance manuals.
- 9. Section 01 78 39 "Project Record Documents" for submitting record Drawings, record Specifications, and record Product Data.
- 10. Section 01 79 00 "Demonstration and Training" for submitting video recordings of demonstration of equipment and training of Owner's personnel.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. Informational Submittals: Written and graphic information and physical samples that the Architect requires to verify performance and quality of project components, but do not require Architect's responsive action. They are also used as verification and certification that the

installed Work or portion of the Work meets the specified requirements. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

- C. Submittals: During construction, the Contractor is required by the Contract Documents to submit product data, shop drawings, samples, informational submittals, closeout submittals, and maintenance material submittals to the Architect for review. These submittals are not Contract Documents unless specifically identified as such in the Contract Documents, and are not to be used by the Contractor or the Architect to modify the Contract. Submittals convey information about systems, equipment, materials, products, and administrative matters. They provide important information to the Architect and, through the Architect, to the Owner. Submittals are also an important part of the quality assurance (QA) for a project.
- D. Submittal Review: Submittals are reviewed and approved by the Contractor to ensure Contract Document requirements have been met, to check dimensions, and to coordinate with subcontractors. In order to maintain proper lines of communication, the Architect receives submittals only from the Contractor. Once approved by the Contractor, they are submitted to the Architect for review and processing. The Architect's review is limited to determining whether the submittal is consistent with the design intent indicated in the Contract Documents.

1.4 SUBMITTAL SCHEDULE

- A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.
 - 1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
 - 2. Initial Submittal: Submit schedule prior to submitting the initial Application for Payment. Include submittals required during the first 60 calendar days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
 - a. Submit revised submittal schedule as required to reflect changes in current status and timing for submittals.
 - 4. Format: Arrange the following information in a tabular format:
 - a. Scheduled date for first submittal.
 - b. Specification Section number and title.
 - c. Submittal Category: Action; informational.
 - d. Name of subcontractor.
 - e. Description of the Work covered.
 - f. Scheduled date for Architect's final release or approval.

1.5 GENERAL ADMINISTRATIVE REQUIREMENTS FOR SUBMITTALS

- A. Architect's Digital Data Files: When requested by the Contractor or subcontractors, and acceptable to the Architect, electronic copies of digital data files of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.
1. The Contract Drawings for this Project were prepared using commercial software on computers.
 2. Upon Architect's acceptance of request, Architect will furnish digital data drawing files of requested sheets of the Contract Drawings to the Contractor for use in preparing Shop Drawings and Project Record Drawings.
 - a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
 - b. Digital Drawing Software Program: The Contract Drawings are available in AutoCAD.
 - c. Prior to release of the files, Contractor and each subcontractor requesting digital data drawing files shall execute a data licensing agreement in the form of the Architect's "Digital Information Release Agreement" form provided in Project Manual as an attachment to the end of this Section and submit the signed agreement to the Architect.
 - d. The final determination of which files can be released will be made by the Architect.
 - e. The following digital data files may be furnished for each appropriate discipline at the Architect's discretion:
 - 1) Architectural floor plans.
 - 2) Architectural reflected ceiling plans.
- B. General Submittal Requirements:
1. Clarity of Submittals: Concise and comprehensive. Pertinent data with all extraneous information deleted. Only data applicable to this Project, supplemented as necessary. Materials, finishes, and option selections indicated. Illustrate fabrication and installation attachments. Indicate specific proposed products and work. Editing marks not to be confused with review marks; do not use red ink or font. Cross reference information to Contract Documents. Where the term "or others" appears, indicate on submittal who is to furnish the material or perform operation so marked.
 2. Completeness: A logical sequence of related information. Sufficient information correlated with requirements of the Contract Documents. Properly identified items with space provisions for processing. Product Data (materials and compliance) prior to or simultaneous with Shop Drawings and Samples. Shop Drawings (graphic assembly) prior to or simultaneous with samples or mockups. Samples (colors and finishes) coordinated and submitted together.
 3. Titles, Labels, and Tags: Provide identification and blank spaces for processing. Do not title, label, or stamp in a manner to conceal finishes or information.
 - a. Product Data: If space does not exist, provide a title page with blank space.
 - b. Shop Drawings: Include title block with adjacent blank space of size specified.
 - c. Samples: Securely attach labels and tags.

1.6 SUBMITTAL FORMATS

- A. Submittal Information: Include the following information in each submittal:

1. Project name.
2. Date.
3. Name of Architect.
4. Name of Contractor.
5. Name of firm or entity that prepared submittal.
6. Names of subcontractor, manufacturer, and supplier.
7. Unique submittal number, including revision identifier. Include Specification Section number with sequential alphanumeric identifier and alphanumeric suffix for resubmittals.
8. Category and type of submittal.
9. Submittal purpose and description.
10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
11. Drawing number and detail references, as appropriate.
12. Indication of full or partial submittal.
13. Location(s) where product is to be installed, as appropriate.
14. Related physical samples submitted directly.
15. Indication of full or partial submittal.
16. Transmittal number, numbered consecutively.
17. Submittal and transmittal distribution record.
18. Other necessary identification.
19. Remarks.
20. Signature of transmitter.

B. Options: Identify options requiring selection by Architect.

C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Architect on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Electronic Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

E. Submittals Utilizing Web-Based Project Software: Prepare submittals as PDF files or other format indicated by Project management software.

1.7 SUBMITTAL PROCEDURES

A. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project management software website. Enter required data in web-based software site to fully identify submittal.

- a. Submittals shall be made in PDF form unless otherwise indicated. Incorporate complete information into each PDF file. Name PDF file with submittal number.

B. Sample Submittals: Physical samples shall be mailed, overnighted, or hand-delivered for review.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
 3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
 4. Coordinate transmittal of submittals for related parts of the Work specified in different Sections, so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received. Architect will notify Owner and Contractor if action on a submittal is withheld.
 5. Prepare and transmit submittals to Architect over a period of time to prevent an influx of submittals for review at one time, in order to avoid delays in processing of submittals.
- D. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
1. Initial Review: The Architect will review and return submittals in an average of 15 calendar days. It is acknowledged and understood that some submittals will take longer to review than others dependent on the complexity of the specific issues involved and the magnitude and quantity of submittals in review at that time. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - a. Allow additional time for Architect's review of submittal when Architect requests further information for a submittal.
 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 3. Resubmittal Review: Allow no less than 15 calendar days for review of each resubmittal. Time necessary for Architect's and Architect's consultants' review of resubmittals shall be absorbed by the Contractor.
 4. Sequential Review: Where sequential review of submittals by Architect's consultants, Owner, or other parties is indicated or allowed by Architect, allow 28 calendar days for initial review of each submittal.
 5. Concurrent Consultant Review: Where the Architect allows or the Contract Documents indicate that submittals may be transmitted simultaneously to Architect and to Architect's consultants, allow 21 calendar days for review of each submittal. Submittal will be returned to Architect before being returned to Contractor.
 - a. Architect will identify types of submittals which can be concurrently submitted to consultants for review at the Preconstruction Conference.
 - b. Submit one copy of submittal to Architect in addition to specified number of copies to concurrent reviewer.
- E. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block, and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.
- F. Distribution: Furnish copies of submittals accepted or approved by Architect and Architect's consultants to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- G. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's consultants, or with "No Exception Taken" or "Exceptions as Noted" from Architect.

1.8 SUBMITTAL REQUIREMENTS

- A. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Manufacturer's product specifications.
 - c. Standard color charts.
 - d. Statement of compliance with specified referenced standards.
 - e. Testing by recognized testing agency.
 - f. Application of testing agency labels and seals.
 - g. Notation of coordination requirements.
 - h. Availability and delivery time information.
 4. For equipment, include the following in addition to the above, as applicable:
 - a. Wiring diagrams that show factory-installed wiring.
 - b. Printed performance curves.
 - c. Operational range diagrams.
 - d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
 5. Submit Product Data before Shop Drawings, and before or concurrently with Samples.
- B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Architect's digital data drawing files is otherwise permitted.
 1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Identification of products.
 - b. Schedules.
 - c. Compliance with specified standards.
 - d. Notation of coordination requirements.
 - e. Notation of dimensions established by field measurement.
 - f. Relationship and attachment to adjoining construction clearly indicated.

- g. Seal and signature of professional engineer if specified.
- C. Samples: Submit Samples for review of type, color, pattern, and texture for a check of these characteristics with other materials.
 1. Transmit Samples that contain multiple, related components, such as accessories together in one submittal package.
 2. Identification: Permanently attach label on unexposed side of Samples that includes the following:
 - a. Project name and submittal number.
 - b. Generic description of Sample.
 - c. Product name and name of manufacturer.
 - d. Sample source.
 - e. Number and title of applicable Specification Section.
 - f. Specification paragraph number and generic name of each item.
 3. Web-Based Project Management Software: Prepare submittals in PDF form, and upload to web-based Project software website. Enter required data in web-based software site to fully identify submittal.
 4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
 5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units, showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit no less than two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will retain one full set and return rest with options selected.
 6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit no less than three sets of Samples. Architect will retain two Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.
 - 1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.

- 2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.
- D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:
1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
 2. Manufacturer and product name, and model number if applicable.
 3. Number and name of room or space.
 4. Location within room or space.
- E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.
- F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.
- G. Certificates:
1. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
 2. Installer Certificates: Submit written statements on manufacturer's letterhead, certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
 3. Manufacturer Certificates: Submit written statements on manufacturer's letterhead, certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
 4. Material Certificates: Submit written statements on manufacturer's letterhead, certifying that material complies with requirements in the Contract Documents.
 5. Product Certificates: Submit written statements on manufacturer's letterhead, certifying that product complies with requirements in the Contract Documents.
 6. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of AWS B2.1/B2.1M on AWS forms. Include names of firms and personnel certified.
- H. Test and Research Reports:
1. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for substrate preparation and primers required.
 2. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
 3. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

4. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
 5. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
 6. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
 - a. Name of evaluation organization.
 - b. Date of evaluation.
 - c. Time period when report is in effect.
 - d. Product and manufacturers' names.
 - e. Description of product.
 - f. Test procedures and results.
 - g. Limitations of use.
- I. Material Safety Data Sheets (MSDSs): If required by Owner, submit information directly to Owner; do not submit to Architect.
1. Architect will not review submittals that include MSDSs and will return the entire submittal for resubmission.

1.9 DELEGATED-DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file and three paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.10 CONTRACTOR'S REVIEW

- A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Contractor's Approval: Indicate Contractor's approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor's approval, and statement certifying that

submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Architect and Architect's consultants will not review submittals received from Contractor that do not indicate Contractor's review and approval and will return them without action.

1.11 ARCHITECT'S AND ARCHITECT'S CONSULTANTS' REVIEW

- A. General: Review and approval is for general conformance with design intent only and assumes no responsibility for dimensions, quantities, and conditions that pertain to fabrication and installation or to processes and techniques of construction. Approval does not authorize changes to the Contract Documents and also excludes changes to the documents which have not been specifically marked/highlighted in the submittal. Contractor is responsible for coordination of the Work of all trades and the performance of this Work in a safe and satisfactory manner.
- B. Action Submittals: Architect or Architect's consultant will review each submittal, indicate corrections or revisions required.
 1. Submittals by Web-Based Project Management Software: Architect will indicate, on Project management software website, the appropriate action.
 - a. Actions taken by indication on Project management software website have the following meanings:
 - 1) "No Exception Taken": Submittals which require no corrections.
 - 2) "Exceptions as Noted": Minor amount of corrections are noted on the submittal; necessary corrections will be assumed as understood by Contractor unless the Architect is notified within seven calendar days.
 - 3) "Incomplete/Resubmit": Submittals returned to the Contractor and not considered as submitted, for reasons such as:
 - a) Violation of submission procedures.
 - b) Inadequately reviewed by the Contractor.
 - c) Not containing the Contractor's approval stamp.
 - d) Inaccurate and substantially in error.
 - e) Lacking completeness or clarity.
 - 4) "Not Subject to Review": Submittals outside of the scope of the Contract Documents and thus returned to the Contractor and not considered as submitted.
 - 5) "Disapproved/Resubmit": Submittals contrary to requirements of the Contract Documents including submission procedure. Necessary corrections are too extensive for consideration.
 - 6) "Provide File Copy with Requested Corrections Identified": Make corrections noted on the submittals and provide a file copy of the corrected submittal for Project documentation. Necessary corrections will be assumed as understood by Contractor unless the Architect is notified within seven calendar days.
- C. Informational Submittals: Architect and Architect's consultants will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

- D. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.
- E. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- F. Architect will return without review submittals received from sources other than Contractor.
- G. Submittals not required by the Contract Documents will be returned by Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 33 00

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SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
 - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
 - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
 - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
 - 4. Specific testing and inspection requirements are not specified in this Section.
- C. Related Requirements:
 - 1. Section 01 43 39 "Mockups" for requirements for integrated exterior mockups and room mockups.
 - 2. Section 01 73 00 "Execution" for repair and restoration of construction disturbed by testing and inspection activities.
 - 3. Section 01 78 39 "Project Record Documents" for submission of copies of the test and inspection log and all required test and inspection reports as miscellaneous records upon completion of the Project.
 - 4. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
 - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Mockups: Physical assemblies of portions of the Work constructed to establish the standard by which the Work will be judged. Mockups are not Samples.
 - 1. Mockups are used for one or more of the following:
 - a. Verify selections made under Sample submittals.
 - b. Demonstrate aesthetic effects.
 - c. Demonstrate the qualities of products and workmanship.
 - d. Demonstrate successful installation of interfaces between components and systems.
 - e. Perform preconstruction testing to determine system performance.
 - 2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.
 - 3. In-Place Mockups: Mockups constructed on-site in their actual final location as part of permanent construction.
- E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
- F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.
- G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
- I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.4 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.5 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Architect for direction before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.6 ACTION SUBMITTALS

- A. Mockup Shop Drawings:
 - 1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
 - 2. Indicate manufacturer and model number of individual components.
 - 3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.7 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
 - 1. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Required Tests and Inspections: Prepare in tabular form and include the following:
 - 1. Specification Section number and title.
 - 2. Entity responsible for performing tests and inspections.
 - 3. Description of test and inspection.
 - 4. Identification of applicable standards.
 - 5. Identification of test and inspection methods.
 - 6. Number of tests and inspections required.
 - 7. Time schedule or time span for tests and inspections.
 - 8. Requirements for obtaining samples.
 - 9. Unique characteristics of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.
- G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.8 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 10 days of Notice to Proceed, and not less than five days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.
- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
 - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
 - 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
 - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
 - 3. Owner-performed tests and inspections indicated in the Contract Documents.

- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

1.9 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
 - 1. Date of issue.
 - 2. Project title and number.
 - 3. Name, address, telephone number, and email address of testing agency.
 - 4. Dates and locations of samples and tests or inspections.
 - 5. Names of individuals making tests and inspections.
 - 6. Description of the Work and test and inspection method.
 - 7. Identification of product and Specification Section.
 - 8. Complete test or inspection data.
 - 9. Test and inspection results and an interpretation of test results.
 - 10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
 - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
 - 12. Name and signature of laboratory inspector.
 - 13. Recommendations on retesting and reinspecting.
- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of technical representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement of whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
 - 1. Name, address, telephone number, and email address of factory-authorized service representative making report.
 - 2. Statement that equipment complies with requirements.

3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
4. Statement of whether conditions, products, and installation will affect warranty.
5. Other required items indicated in individual Specification Sections.

1.10 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. **Manufacturer Qualifications:** A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. **Fabricator Qualifications:** A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. **Installer Qualifications:** A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. **Professional Engineer Qualifications:** A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.
- F. **Specialists:** Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
 1. Requirements of authorities having jurisdiction supersede requirements for specialists.
- G. **Testing and Inspecting Agency Qualifications:** An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. **Manufacturer's Technical Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. **Factory-Authorized Service Representative Qualifications:** An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. **Mockups:** Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 3. Notify Architect at least seven days in advance of dates and times when mockups will be constructed.
 4. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
 5. Demonstrate the proposed range of aesthetic effects and workmanship.
 6. Obtain Architect's approval of mockups before starting corresponding Work, fabrication, or construction.
 - a. Allow at least seven days for initial review and each re-review of each mockup.
 7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
 8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 10. Demolish and remove mockups, including footings, when directed unless otherwise indicated.
- K. Specialty Mockups: See Section 01 43 39 "Mockups" for additional construction requirements for integrated exterior mockups and room mockups.

1.11 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
 2. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor, and the Contract Sum will be adjusted by Change Order.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
 2. Engage a qualified testing agency to perform quality-control services.
 - a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
 3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
 4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
 3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
 6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures."
- F. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
 4. Facilities for storage and field curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 7. Security and protection for samples and for testing and inspection equipment at Project site.
- H. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. Schedule of Required Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents as a component of Contractor's quality-control plan. Coordinate and submit concurrently with Contractor's Construction Schedule. Update as the Work progresses.
 1. Schedule Contents: Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
 2. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.12 SPECIAL TESTS AND INSPECTIONS

- A. Special Tests and Inspections: Owner will engage a qualified testing agency or special inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
 1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures, and reviewing the completeness and adequacy of those procedures to perform the Work.
 2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
 4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 5. Interpreting tests and inspections, and stating in each report whether tested and inspected Work complies with or deviates from the Contract Documents.
 6. Retesting and reinspecting corrected Work.
- B. Where individual Specification Section states "Owner will engage..." with respect to field quality control, the Owner will pay for testing and inspections specified. Cooperate with Owner's inspector as required.
- C. Where individual Specification Section states "Engage..." with respect to field quality control, Contractor is responsible for testing and inspections specified.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

- A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:
 1. Date test or inspection was conducted.
 2. Description of the Work tested or inspected.
 3. Date test or inspection results were transmitted to Architect.
 4. Identification of testing agency or special inspector conducting test or inspection.

- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's, Owner's, and authorities' having jurisdiction reference during normal working hours.
 - 1. Submit log at Project closeout as part of Project Record Documents.

3.2 PRE-ROUGH-IN WALK-THROUGH

- A. Schedule a walk-through of all spaces with Owner's personnel and Architect after framing installation and during any utility rough-in has begun. Locations of all utilities and other required items are to be reviewed and approved by the Owner at this walk-through. A pre-close-in-walk-through will be held to verify that installation of items is acceptable.

3.3 PRE-CLOSE-IN WALK-THROUGH

- A. Prior to wall close-in with application of wall finishes, Contractor shall coordinate a walk-through with Architect, Owner, and Owner's Property Manager and Maintenance personnel in order to address deficiencies, including locations of boxes for electrical switches and outlets, installation of insulation at exterior walls, blocking at walls for toilets and bathtubs, and other requirements of the Contract Documents. Contractor shall coordinate walk-through attendance as necessary to discuss any required design changes.

3.4 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
 - 1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 01 73 00 "Execution."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00

SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
 - 1. Definitions for construction terminology not otherwise defined in the Contract Documents are defined in the "Construction Dictionary" as published by the "Greater Phoenix, Arizona Chapter #98 of the National Association of Women in Construction," 5060 N. 19th Ave. #107, Phoenix, Arizona, 85015-3211; ph.: 602-841-7900.
- B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."
- E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- G. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.
- H. "Provide": Furnish and install, complete and ready for the intended use.
- I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied

directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.
 - 1. For standards referenced by applicable building codes, comply with dates of standards as listed in building codes.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Abbreviations and acronyms not included in this list shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States." The information in this list is subject to change and is believed to be accurate as of the date of the Contract Documents.

- 1. AABC - Associated Air Balance Council; www.aabc.com.
- 2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
- 3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
- 4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
- 5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
- 6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
- 7. ABMA - American Boiler Manufacturers Association; www.abma.com.
- 8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
- 9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
- 10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
- 11. AF&PA - American Forest & Paper Association; www.afandpa.org.
- 12. AGA - American Gas Association; www.aga.org.
- 13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
- 14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
- 15. AI - Asphalt Institute; www.asphaltinstitute.org.
- 16. AIA - American Institute of Architects (The); www.aia.org.
- 17. AISC - American Institute of Steel Construction; www.aisc.org.
- 18. AISI - American Iron and Steel Institute; www.steel.org.
- 19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
- 20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
- 21. ANSI - American National Standards Institute; www.ansi.org.
- 22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
- 23. APA - APA - The Engineered Wood Association; www.apawood.org.
- 24. APA - Architectural Precast Association; www.archprecast.org.
- 25. API - American Petroleum Institute; www.api.org.
- 26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
- 27. ARI - American Refrigeration Institute; (See AHRI).
- 28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.

29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
34. ASSP - American Society of Safety Professionals (The); www.assp.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AVIXA - Audiovisual and Integrated Experience Association; (Formerly: Infocomm International); www.soundandcommunications.com.
38. AWEA - American Wind Energy Association; www.awea.org.
39. AWI - Architectural Woodwork Institute; www.awinet.org.
40. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
41. AWWA - American Water Works Association; www.awwa.org.
42. AWS - American Welding Society; www.aws.org.
43. AWWA - American Water Works Association; www.awwa.org.
44. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
45. BIA - Brick Industry Association (The); www.gobrick.com.
46. BICSI - BICSI, Inc.; www.bicsi.org.
47. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
48. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
49. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
50. CDA - Copper Development Association; www.copper.org.
51. CE - Conformite Europeenne; www.ec.europa.eu/growth/single-market/ce-marking.
52. CEA - Canadian Electricity Association; www.electricity.ca.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.compositepanel.org.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - CSA Group; www.csa-group.org.
65. CSI - Construction Specifications Institute (The); www.csiresources.org.
66. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
67. CTA - Consumer Technology Association; www.cta.tech.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.coolingtechnology.org.
69. CWC - Composite Wood Council; (See CPA).
70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHA - Decorative Hardwoods Association; (Formerly: Hardwood Plywood & Veneer Association); www.decorativehardwoods.org.
72. DHI - Door and Hardware Institute; www.dhi.org.
73. ECA - Electronic Components Association; (See ECIA).
74. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
75. ECIA - Electronic Components Industry Association; www.ecianow.org.

76. EIA - Electronic Industries Alliance; (See TIA).
77. EIMA - EIFS Industry Members Association; www.eima.com.
78. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
79. EOS/ESD Association; (Electrostatic Discharge Association); www.esda.org.
80. ESTA - Entertainment Services and Technology Association; (See PLASA).
81. ETL - Intertek (See Intertek); www.intertek.com.
82. EVO - Efficiency Valuation Organization; www.evo-world.org.
83. FCI - Fluid Controls Institute; www.fluidcontrolsintstitute.org.
84. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
85. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
86. FM Approvals - FM Approvals LLC; www.fmglobal.com.
87. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
88. FRSA - Florida Roofing, Sheet Metal Contractors Association, Inc.; www.floridarroof.com.
89. FSA - Fluid Sealing Association; www.fluidsealing.com.
90. FSC - Forest Stewardship Council U.S.; www.fscus.org.
91. GA - Gypsum Association; www.gypsum.org.
92. GANA - Glass Association of North America; (See NGA).
93. GBCI - Green Building Certification Institute; www.gbci.org.
94. GS - Green Seal; www.greenseal.org.
95. HI - Hydraulic Institute; www.pumps.org.
96. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
97. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
98. HPVA - Hardwood Plywood & Veneer Association; (See DHA).
99. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
100. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
101. IAS - International Accreditation Service; www.iasonline.org.
102. ICBO - International Conference of Building Officials; (See ICC).
103. ICC - International Code Council; www.iccsafe.org.
104. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
105. ICPA - International Cast Polymer Association; www.theicpa.com.
106. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
107. IEC - International Electrotechnical Commission; www.iec.ch.
108. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
109. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
110. IESNA - Illuminating Engineering Society of North America; (See IES).
111. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
112. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
113. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.org.
114. II - Infocomm International; (See AVIXA).
115. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
116. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
117. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
118. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
119. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
120. ISO - International Organization for Standardization; www.iso.org.
121. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
122. ITU - International Telecommunication Union; www.itu.int.
123. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
124. LMA - Laminating Materials Association; (See CPA).
125. LPI - Lightning Protection Institute; www.lightning.org.

126. MBMA - Metal Building Manufacturers Association; www.mbma.com.
127. MCA - Metal Construction Association; www.metalconstruction.org.
128. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
129. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
130. MHIA - Material Handling Industry of America; www.mhia.org.
131. MIA - Marble Institute of America; (See NSI).
132. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
133. MPI - Master Painters Institute; www.paintinfo.com.
134. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
135. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
136. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
137. NADCA - National Air Duct Cleaners Association; www.nadca.com.
138. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
139. NALP - National Association of Landscape Professionals; www.landscapeprofessionals.org.
140. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
141. NBI - New Buildings Institute; www.newbuildings.org.
142. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
143. NCMA - National Concrete Masonry Association; www.ncma.org.
144. NEBB - National Environmental Balancing Bureau; www.nebb.org.
145. NECA - National Electrical Contractors Association; www.necanet.org.
146. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
147. NEMA - National Electrical Manufacturers Association; www.nema.org.
148. NETA - InterNational Electrical Testing Association; www.netaworld.org.
149. NFHS - National Federation of State High School Associations; www.nfhs.org.
150. NFPA - National Fire Protection Association; www.nfpa.org.
151. NFPA - NFPA International; (See NFPA).
152. NFRC - National Fenestration Rating Council; www.nfrc.org.
153. NGA - National Glass Association (The); (Formerly: Glass Association of North America); www.glass.org.
154. NHLA - National Hardwood Lumber Association; www.nhla.com.
155. NLGA - National Lumber Grades Authority; www.nlga.org.
156. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
157. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
158. NRCA - National Roofing Contractors Association; www.nrca.net.
159. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
160. NSF - NSF International; www.nsf.org.
161. NSI - National Stone Institute; (Formerly: Marble Institute of America); www.naturalstoneinstitute.org.
162. NSPE - National Society of Professional Engineers; www.nspe.org.
163. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
164. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
165. NWFA - National Wood Flooring Association; www.nwfa.org.
166. NWRA - National Waste & Recycling Association; www.wasterecycling.org.
167. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
168. PDI - Plumbing & Drainage Institute; www.pdionline.org.
169. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); www.plasa.org.
170. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
171. RFCI - Resilient Floor Covering Institute; www.rfci.com.
172. RIS - Redwood Inspection Service; www.redwoodinspection.com.
173. SAE - SAE International; www.sae.org.
174. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
175. SDI - Steel Deck Institute; www.sdi.org.

176. SDI - Steel Door Institute; www.steeldoor.org.
 177. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
 178. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
 179. SIA - Security Industry Association; www.siaonline.org.
 180. SJI - Steel Joist Institute; www.steeljoist.org.
 181. SMA - Screen Manufacturers Association; www.smainfo.org.
 182. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
 183. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
 184. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
 185. SPIB - Southern Pine Inspection Bureau; www.spib.org.
 186. SPRI - Single Ply Roofing Industry; www.spri.org.
 187. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
 188. SSINA - Specialty Steel Industry of North America; www.ssina.com.
 189. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
 190. STI - Steel Tank Institute; www.steeltank.com.
 191. SWI - Steel Window Institute; www.steelwindows.com.
 192. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
 193. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
 194. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
 195. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
 196. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
 197. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
 198. TMS - The Masonry Society; www.masonrysociety.org.
 199. TPI - Truss Plate Institute; www.tpinst.org.
 200. TPI - Turfgrass Producers International; www.turfgrassod.org.
 201. TRI - Tile Roofing Institute; www.tilerroofing.org.
 202. UL - Underwriters Laboratories Inc.; www.ul.com.
 203. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
 204. USAV - USA Volleyball; www.usavolleyball.org.
 205. USGBC - U.S. Green Building Council; www.usgbc.org.
 206. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
 207. WA - Wallcoverings Association; www.wallcoverings.org.
 208. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
 209. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
 210. WDMA - Window & Door Manufacturers Association; www.wdma.com.
 211. WI - Woodwork Institute; www.wicnet.org.
 212. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.
1. DIN - Deutsches Institut für Normung e.V.; www.din.de.
 2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
 3. ICC - International Code Council; www.iccsafe.org.
 4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.
- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.
15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.govinfo.gov.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
 - a. Available from Defense Standardization Program; www.dsp.dla.mil.
 - b. Available from General Services Administration; www.gsa.gov.
 - c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org.
6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.

2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cdph.ca.gov/Programs/CCDPPH/DEODC/EHLB/IAQ/Pages/Main-Page.aspx.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservation.tamu.edu.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

SECTION 01 43 39

MOCKUPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Integrated exterior mockups.
- 2. Room mockups.

- B. Related Requirements:

- 1. Section 01 40 00 "Quality Requirements" for quality assurance requirements for aesthetic and workmanship mockups specified in other Sections.

1.3 DEFINITIONS

- A. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements, consisting of multiple products, assemblies, and subassemblies.
- B. Room Mockups: Mockups of typical interior spaces complete with wall, floor, and ceiling finishes; doors; windows; millwork; casework; specialties; furnishings and equipment; and lighting as indicated.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Meet with Owner, Architect, testing and inspecting agency representative, and installers of major systems whose Work is included in integrated exterior and room mockups.
- 2. Review coordination of equipment and furnishings provided by the Owner for room mockups.
- 3. Review locations and extent of mockups.
- 4. Review testing procedures to be performed on mockups.
- 5. Review and finalize schedule for mockups, and verify availability of materials, personnel, equipment, and facilities needed to complete mockups and testing and maintain schedule for the Work.

1.5 ACTION SUBMITTALS

- A. Shop Drawings: For integrated exterior mockups.
 - 1. Include plans, elevations, sections, and support details.
 - 2. Indicate manufacturer and model number of individual components, subassemblies, and assemblies.
 - 3. Include site location drawing indicating orientation of mockup.
 - 4. Revise and resubmit Shop Drawings to reflect approved modifications in details and component interfaces resulting from changes made during testing procedures.
- B. Delegated Design Submittal: For temporary structural supports for mockups not attached to building structure, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Preconstruction Test Reports: For integrated exterior mockups.

1.7 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and acceptable to Owner and Architect.
- B. Build mockups to do the following:
 - 1. Verify selections made under Sample submittals.
 - 2. Demonstrate aesthetic effects.
 - 3. Demonstrate the qualities of products and workmanship.
 - 4. Demonstrate acceptable coordination between components and systems.
 - 5. Perform preconstruction testing, such as window air- and water-infiltration testing.
- C. Fabrication: Before fabricating or installing portions of the Work requiring mockups, build mockups for each form of construction and finish required. Use materials and installation methods as required for the Work.
 - 1. Build mockups of size indicated.
 - 2. Build mockups in location indicated or, if not indicated, as directed by Architect.
 - 3. Employ supervisory personnel who will oversee mockup construction. Employ workers who will be employed to perform same tasks during the construction at Project.
 - 4. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mockups when directed unless otherwise indicated.
- D. Notifications:
 - 1. Notify Architect seven days in advance of the dates and times when mockups will be constructed.
 - 2. Notify Architect 14 days in advance of the dates and times when mockups will be tested.
 - 3. Allow seven days for initial review and each re-review of each mockup.

- E. Approval: Obtain Architect's approval of mockups before starting fabrication or construction of corresponding Work.
 - 1. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 COORDINATION

- A. Coordinate schedule for construction of mockups, so construction, testing, and review of mockups do not impact Project schedule.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design support structure for free-standing mockups.
- B. Structural Performance:
 - 1. Wind Loads: As indicated on Drawings.
- C. Mockup Testing Performance Requirements: Perform tests using design pressures and performance criteria indicated for assemblies and products that are specified in other Sections and incorporated into integrated exterior mockups.

2.2 INTEGRATED EXTERIOR MOCKUPS

- A. Construct integrated exterior mockups as indicated on Drawings. Construct mockups to demonstrate constructability, coordination of trades, and sequencing of Work; and to ensure materials, components, subassemblies, assemblies, and interfaces integrate into a system complying with indicated performance and aesthetic requirements.
- B. Design and construct foundation and superstructure to support free-standing integrated exterior mockups.
- C. Build integrated exterior mockups using installers and construction methods that will be used in completed construction.
- D. Use specified products that have been approved by the Architect. Coordinate installation of materials and products specified in individual Specification Sections that include Work included in integrated exterior mockups.
- E. The Work of integrated exterior mockups includes, but is not limited to, the following:
 - 1. Masonry veneer.
 - 2. Cold-formed metal framing and sheathing.

3. Air and weather barriers.
 4. Thermal insulation.
 5. Through-wall flashing.
 6. Flashing and sheet metal trim.
 7. Joint sealants.
 8. Aluminum-framed entrances and storefront.
 9. Glazing.
- F. Photographic Documentation: Document construction of integrated exterior mockups with photographs in accordance with Section 01 32 33 "Photographic Documentation." Provide photographs showing details of interface of different materials and assemblies.
1. Document testing procedures, including water leakage and other deficiencies. Photograph modifications to component interfaces intended to correct deficiencies.
- G. Provide and document modifications to construction details and interfaces between components and systems required to properly sequence the Work, or to pass performance testing requirements. Obtain Architect's approval for modifications.
- H. Demolish and remove integrated exterior mockups, including footings, when directed unless otherwise indicated.

2.3 ROOM MOCKUPS

- A. Build room mockups as indicated on Drawings to evaluate constructability, demonstrate the coordination of trades and sequencing of Work, and to demonstrate aesthetic requirements. Include each visible finish, component, and equipment item within room mockups; include operable lighting.
- B. Provide room mockups of the following rooms:
1. Residential apartment unit.
- C. The Work of room mockups includes, but is not limited to, the following:
1. Millwork and casework.
 2. Doors and frames.
 3. Access doors and frames.
 4. Glazing.
 5. Metal framing.
 6. Gypsum board.
 7. Ceramic tiling.
 8. Resilient flooring.
 9. Painting.
 10. Registers and grilles.
 11. Wiring devices.
 12. Lighting.

PART 3 - EXECUTION

3.1 TESTING OF INTEGRATED EXTERIOR MOCKUPS

- A. Integrated Exterior Mockup Testing Agency: Engage a qualified testing agency to perform tests and inspections.
 - 1. Testing and inspecting agency will interpret tests and state in each report whether tested Work complies with or deviates from requirements.
- B. Integrated Exterior Mockup Testing Services: Perform the following tests in the following order:
 - 1. Water-Spray Test: Before installation of interior finishes has begun, test areas designated by Architect in accordance with AAMA 501.2 for evidence of water penetration.
 - a. Perform a minimum of two tests in areas as directed by Architect.
 - 2. Air Leakage: Test in accordance with ASTM E783 at 1.5 times the rate specified in "Mockup Testing Performance Requirements" Paragraph in "Performance Requirements" Article, but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 - a. Perform a minimum of two tests in areas as directed by Architect.
 - 3. Water Penetration: Test in accordance with ASTM E1105 at a minimum uniform and cyclic static-air-pressure differential of 0.67 times the static-air-pressure differential specified for laboratory testing in "Mockup Testing Performance Requirements" Paragraph in "Performance Requirements" Article, but not less than 6.24 lbf/sq. ft., and verify no evidence of water penetration.
- C. Integrated exterior mockup will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 01 43 39

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SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for work restrictions and limitations on utility interruptions.

1.3 USE CHARGES

- A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Architect, testing agencies, and authorities having jurisdiction.
- B. Water and Sewer Service from Existing System: Water from Owner's existing water system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.
- C. Electric Power Service from Existing System: Electric power from Owner's existing system is available for use with metering. Provide connections and extensions of services and metering as required for construction operations.

1.4 INFORMATIONAL SUBMITTALS

- A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.
- B. Implementation and Termination Schedule: Within 15 days of date established for commencement of the Work, submit schedule indicating implementation and termination dates of each temporary utility.
- C. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.
- D. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent.

- E. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.
 - F. Moisture- and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold. Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.
 - 1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and requirements for replacing water-damaged Work.
 - 2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
 - 3. Indicate methods to be used to avoid trapping water in finished work.
 - G. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste-handling procedures.
 - 5. Other dust-control measures.
 - H. Noise and Vibration Control Plan: Identify construction activities that may impact the occupancy and use of existing spaces within the building or adjacent existing buildings, whether occupied by others, or occupied by the Owner. Include the following:
 - 1. Methods used to meet the goals and requirements of the Owner.
 - 2. Concrete cutting method(s) to be used.
 - 3. Location of construction devices on the site.
 - 4. Show compliance with the use and maintenance of quieted construction devices for the duration of the Project.
 - 5. Indicate activities that may disturb building occupants and that are planned to be performed during non-standard working hours as coordinated with the Owner.
- 1.5 QUALITY ASSURANCE
- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
 - B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.
- 1.6 PROJECT CONDITIONS
- A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its

use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Portable Chain-Link Fencing: Minimum 2-inch, 0.148-inch-thick, galvanized-steel, chain-link fabric fencing; minimum 6 feet high with galvanized-steel pipe posts; minimum 2-3/8-inch-OD line posts and 2-7/8-inch-OD corner and pull posts, with 1-5/8-inch-OD top and bottom rails. Provide concrete bases for supporting posts.

2.2 TEMPORARY FACILITIES

- A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly. Furnish and equip offices as follows:
 - 1. Furniture required for Project-site documents, including file cabinets, plan tables, plan racks, and bookcases.
 - 2. Conference room of sufficient size to accommodate meetings of 10 individuals. Provide electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall. Furnish room with conference table, chairs, and 4-foot-square tack and marker boards.
 - 3. Drinking water and private toilet.
 - 4. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
 - 5. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- C. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.
 - 1. Store combustible materials apart from building.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating, Cooling, and Dehumidifying Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.
 - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return-air grille

in system and remove at end of construction and clean HVAC system as required in Section 01 77 00 "Closeout Procedures."

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

- A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

3.2 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Section 01 10 00 "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
 - 1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Use of Permanent Toilets: Use of Owner's existing or new toilet facilities is not permitted.
- E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. Provide temporary dehumidification systems when required to reduce ambient and substrate moisture levels to level required to allow installation or application of finishes and their proper curing or drying.

- F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
1. Install electric power service overhead unless otherwise indicated.
 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
- H. Telephone Service: Provide temporary telephone service in common-use facilities for use by all construction personnel. Install WiFi cell phone access and one land-based telephone line for each field office.
1. At each telephone, post a list of important telephone numbers.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Contractor's emergency after-hours telephone number.
 - e. Architect's office.
 - f. Engineers' offices.
 - g. Owner's office.
 - h. Principal subcontractors' field and home offices.
- I. Electronic Communication Service: Provide secure WiFi wireless connection to internet with provisions for access by Architect and Owner.
- J. Project Computer: Provide a desktop computer in the primary field office adequate for use by Architect and Owner to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:
1. Processor: Intel Core i5 or i7.
 2. Memory: 16 gigabyte.
 3. Disk Storage: 1-terabyte hard-disk drive and combination DVD-RW/CD-RW drive.
 4. Display: 24-inch LCD monitor with 256-Mb dedicated video RAM.
 5. Full-size keyboard and mouse.
 6. Network Connectivity: Gigabit.
 7. Operating System: Microsoft Windows 10 Professional.
 8. Productivity Software:
 - a. Microsoft Office Professional, 2013 or higher, including Word, Excel, and Outlook.
 - b. Adobe Reader DC.
 - c. WinZip 10.0 or higher.
 9. Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, scanning, and faxing, or separate units for each of these three functions.
 10. Internet Service: Broadband modem, router, and ISP, equipped with hardware firewall, providing minimum 10.0-Mbps upload and 15-Mbps download speeds at each computer.
 11. Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
 12. Backup: External hard drive, minimum 2 terrabytes, with automated backup software providing daily backups.

3.4 SUPPORT FACILITIES INSTALLATION

- A. Comply with the following:
1. Provide construction for temporary field offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible in accordance with ASTM E136. Comply with NFPA 241.
 2. Maintain support facilities until Architect schedules Substantial Completion inspection. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Temporary Use of Planned Permanent Roads and Paved Areas: Locate temporary roads and paved areas in same location as permanent roads and paved areas. Construct and maintain temporary roads and paved areas adequate for construction operations. Extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.
1. Coordinate elevations of temporary roads and paved areas with permanent roads and paved areas.
 2. Prepare subgrade and install subbase and base for temporary roads and paved areas in accordance with Section 31 20 00 "Earth Moving."
 3. Recondition base after temporary use, including removing contaminated material, regrading, proofrolling, compacting, and testing.
 4. Delay installation of final course of permanent hot-mix asphalt pavement until immediately before Substantial Completion. Repair hot-mix asphalt base-course pavement before installation of final course in accordance with Section 32 12 16 "Asphalt Paving."
- D. Traffic Controls: Comply with requirements of authorities having jurisdiction.
1. Protect existing site improvements to remain, including curbs, pavement, and utilities.
 2. Maintain access for fire-fighting equipment and access to fire hydrants.
- E. Parking: Use designated areas of Owner's existing parking areas for construction personnel.
- F. Storage and Staging: Use designated areas of Project site for storage and staging needs.
- G. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
 2. Remove snow and ice as required to minimize accumulations.
- H. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.
1. Identification Signs: Provide Project identification signs as indicated on Drawings.

2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
 - a. Provide temporary, directional signs for construction personnel and visitors.
3. Maintain and touch up signs, so they are legible at all times.
- I. Waste Disposal Facilities: Comply with requirements specified in Section 01 74 19 "Construction Waste Management and Disposal."
- J. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
- K. Temporary Elevator Use: See Division 14 elevator Section for temporary use of new elevators.
- L. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- M. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
 1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
 1. Comply with work restrictions specified in Section 01 10 00 "Summary."
- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings.
 1. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross tree- or plant-protection zones.
 2. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 3. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 4. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

- D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.
- F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals, so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.
- G. Site Enclosure Fence: Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.
- H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.
- I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- J. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.
- K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
 - 1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition in accordance with requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign, stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 MOISTURE AND MOLD CONTROL

- A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.
- B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Remove standing water from decks.
 - 5. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter.
 - 4. Discard or replace water-damaged material.
 - 5. Do not install material that is wet.
 - 6. Discard and replace stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.
- D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:
 - 1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
 - 2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
 - 3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.
 - a. Hygroscopic materials that may support mold growth, including wood and gypsum-based products, that become wet during the course of construction and remain wet for 48 hours are considered defective and require replacing.
 - b. Measure moisture content of materials that have been exposed to moisture during construction operations or after installation. Record readings beginning at time of exposure and continuing daily for 48 hours. Identify materials containing moisture levels higher than allowed. Report findings in writing to Architect.
 - c. Remove and replace materials that cannot be completely restored to their manufactured moisture level within 48 hours.

3.7 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 2. Remove temporary roads and paved areas not intended for or acceptable for integration into permanent construction. Where area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at temporary entrances, as required by authorities having jurisdiction.
 3. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 01 77 00 "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 50 01

MAINTENANCE AND PROTECTION OF TRAFFIC

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Westchester County Health Care Corporation General Conditions and any Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Under this Item the Contractor shall maintain traffic and protect the public from damage to person and property within the limits of and for the duration of the contract in accordance with the plans, as specified herein and as ordered by the Engineer. The contractor shall conduct his operations in such manner as to insure the safety of motorists, pedestrians and his own employees and in such sequence that inconvenience and discomfort to the general public and delays to traffic will be kept to an absolute minimum. The contractor shall provide temporary signs, markers and other approved devices together with qualified, courteous personnel to protect and to guide traffic and pedestrians through and around the contract area. When necessary, the Contractor shall construct temporary detours and structures of sufficient strength and capacity to accommodate the volume and character of traffic on and along the road. The contractor shall give advance notice to the Owner, local police and fire department together with residents and other affected parties before commencing any operations which will interfere with the normal procedure of traffic or pedestrian flow along the road or roads, or into buildings and properties within the contract limits.
- B. The Contractor is hereby informed that all of the measures required to attain satisfactory accomplishment under this item are not necessarily included herein. He shall be prepared to supplement these specifications by such other work and methods as may be deemed necessary by the Engineer to achieve whatever results are desired.
- C. Incorporated herein by reference, the Contractor shall also be responsible for complying with all applicable sections of the New York State Department of Transportation (NYSDOT) Standard Specifications, dated May 4, 2006, and any addendums thereto for all work within any public right-of-way.
- D. The Contractor shall comply with all requirements of the Westchester County Department of Public Works and Transportation Highway Work Permits issued by the Department for all required road improvement work.

PART 2 - PRODUCTS

2.01 MATERIALS/EQUIPMENT

- A. Signs shall be in accordance with the specifications and requirements contained in the New York State Manual of Uniform Traffic Control Devices (NYSMUTCD) latest revision. The Contractor's attention is directed to Section 1682 of the New York State Vehicle and Traffic

Law which mandates conformance with the above specifications. ALL SIGNS SHALL BE REFLECTIVE FLUORESCENT ORANGE.

- B. Traffic cones shall have a minimum perpendicular height of 28-inches or higher with platform flat type base and tapered or ramp-like edges. They shall be orange in color with an orange base and kept clean for maximum visibility. When used after dark they shall have two white horizontal stripes of reflective material near the tip. The reflective material shall conform to the requirements of Subsection 730-05, Reflective Sheeting, Class A, B or C of the NYSDOT Standard Specifications. The upper stripe shall be 6-inches wide with its upper edge 3-to 4-inches below the top of the cone. The lower stripe shall be 4-inches wide with its upper edge 2-inches below the upper stripe.
- C. Lighted barricades i.e.: barricades illuminated by steady burning Lights, including all single-unit, steady burning low intensity lights. The electrical power may be supplied by batteries, portable generators or commercial power. All electrical, steady burning lights shall be 69Watt. C-9 Traffic Lamps, emit yellow light, operate dusk to dawn and be mounted on portable or fixed barricades.

The Contractor shall maintain and repair any damage to the barricades, including necessary painting, reflectorizing and replacement of broken or worn parts and at all times keep the barricades clean, visible and lighted to the satisfaction of the Engineer and in conformance with the NYSMUTCD.

Use of open flame flares is prohibited.

- D. Metal plating shall be safe and suitable for the intended use and shall comply with OSHA standards. If metal plating is to be left in place for more than 24-hours, the plating shall have the edges sealed in asphalt to provide a smooth lip. All plating and decking installed shall be made safe for vehicles and pedestrians and shall be adequate to carry the load. Size shall be large enough to span opening, be firmly bedded to prevent noise and rocking, shall overlap the edges of trenches and openings, be sufficiently ramped to provide smooth riding and safe conditions.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERAL

- A. The Contractor shall furnish, erect, move and remove temporary concrete barrier, construction barricades and lighting as specified above for barrier and barricades where and as indicated on the plans. Barrier and barricades shall be as referred to in the NYSDOT Transportation Construction and Materials Standard Specifications latest edition, as amended for Section 619-Maintenance and Protection of Traffic, and in accordance with the NYSMUTCD or as directed by the Engineer.

Barriers shall be fastened together to form a continuous chain so that no slack is evident at the joint connection. Construction barricades shall be so spaced to delineate a closed section of pavement to the approaching traffic.

- B. The Contractor shall provide and maintain delineators on temporary barriers. The delineation shall make the barrier visual to approaching traffic as well as to traffic that is adjacent to the barrier. Delineation may be made with paint, reflective removable tape or other material meeting the requirements of NYSMUTCD and approved by the Engineer.

- C. Where indicated on the plans or in the proposal, barrier and/or barricade shall be supplemented with lighting devices as indicated.
- D. Plastic drums may be used for delineation and guiding devices as required and directed by the Engineer provided they are of the proper size and reflectorized as indicated in the NYSMUTCD. The plastic drums shall have provisions for the installation of ballast (weights) to prevent the drums from blowing over due to wind loading. The ballast shall be located at or near ground level and consist of bagged sand weighing no more than 50-pounds. For two-piece drums, only the base shall be detachable no more than 4-inches above the pavement. For one-piece drums the base shall be elongated to accept ballast bags on one or more sides. No open top or metal drums will be permitted.

When plastic drums are used for delineation they shall be maintained vertical, in proper alignment, and kept clean at all times. The sand bag ballast shall be placed inside for drums with detachable bases, and on the approach side for one-piece drums with elongated bases. Under no circumstances shall the ballast be placed on top of the drum. Where lights are specified on top of the drums, the lights shall be attached to the drums with nuts, bolts and washers.

Other markers or delineators may be circular or rectangular in shape and shall be constructed of reflective sheeting having a minimum area of 20 square inches or of reflective buttons having a minimum diameter of 3-inches. All reflective delineators or markers shall conform to the requirements of the NYSMUTCD.

- E. The Contractor shall furnish, erect, move and remove delineation and guiding devices as required and directed by the Engineer. In areas where grading is being done, a safe and reasonable roadway shall be properly delineated at all times, either by the use of guiding devices or flagmen. The Contractor shall delineate areas where there is a drop-off near the edge of the traveled way and areas on which it is unsafe to travel.
- F. Plastic drums or containers set on end, may be used as delineators, provided they are of proper size and reflectorized as indicated in the NYSMUTCD. They shall be kept clean at all times. Other markers or delineators may be circular or rectangular in shape and shall be constructed of reflective sheeting having a minimum area of 20 square inches or of reflective buttons having a minimum diameter of 3-inches. All reflective delineators or markers shall conform to the requirements of the NYSMUTCD.
- G. The use of metal drums for barricades will not be permitted.
- H. Timber for temporary structures (walkways, steps, crossovers, etc.) shall be sound, square edged, free from shakes, loose knots or decay and shall be securely fastened at all contact points by nailing or bolting as may be required. When specific details are not shown on the plans, timber shall be of the necessary sizes, dimensions and stress value to support the loads for which they are constructed. Only new timber shall be furnished for steps and handrails and when used for handrails they shall be surfaced on all four sides.
- I. Provisions for Travel Way – The Contractor shall provide when possible, a travel way for two lanes of traffic. He shall so schedule his work as to keep to a minimum the amount of pavement that is removed in whole or in part or is substantially damaged at any one time. When and where necessary the traveled way shall be kept well drained and reasonably smooth and hard at all times. The required equipment and personnel to attain and maintain a satisfactory riding surface shall be available for use as needed when the work is under way or temporarily

suspended. Special attention shall be given to providing a satisfactory travel way over weekends, holidays and during the winter season.

- J. Whenever it becomes necessary to maintain traffic on one lane, the Contractor shall provide adequate traffic controls on the section of roadway on which vehicle operation is maintained. He shall employ a sufficient number of competent flagpersons and/or temporary traffic signals to control one lane traffic continuously. In the event the length of the one lane operation is extremely short and conditions are favorable for safe operation, the Engineer may, in writing, authorize the Contractor to dispense with flagpersons or traffic control signals.

The Contractor shall also provide a sufficient number of competent flaggers in areas where construction equipment is operating in potential conflict with public traffic, regardless of the volume of traffic or the sight distance. Flaggers shall wear orange hard hats meeting current OSHA standards for impact, electrical shock, and burn protection and vests in conformance with the NYSMUTCD and shall direct traffic in conformance with said manual. Sign Paddles, in lieu of flags, may be required by the Engineer.

- K. The Contractor shall keep the travel way free and clear of all dirt, debris, stones, timber or other obstructions. Material spilled from the Contractor's vehicles during hauling operations along or across any public traveled way shall be removed immediately, both within and outside the contract limits. Whenever dusty conditions arise as a result of the Contractor's operations they shall be corrected by the use of calcium chloride and/or water. Water used as a palliative shall be distributed uniformly over a minimum width of eight feet by use of spray heads or bar.
- L. Temporary Signs, Devices, Etc. – The Contractor shall furnish and erect, or otherwise place as required and as directed by the Engineer, reflectorized signs, traffic cones, barricades and other approved devices to post the construction area and to inform the traveling public. All signs shall be mounted at the required height, kept clean and so placed as to be effective both day and night. Signs, cones, barricades, etc., shall be used and placed to apprise the motorists and/or pedestrians of any unusual or unsafe condition and give timely warning for the necessary action to traverse the area safely. Any area judged by the Engineer to be particularly hazardous shall be delineated by means of temporary concrete barriers with mounted flasher units. Signs, markers, barricades, etc., shall be moved, removed or changed as warranted to indicate actual conditions. At the conclusion of the work under the contract all temporary signs and guiding devices shall be removed and shall remain the property of the Contractor unless specified otherwise.
- M. Flasher lights shall be in operation from sunset to sunrise and at such other times as may be necessary for their intended purpose. The use of fuel-burning devices will not be permitted.
- N. The Contractor shall furnish, apply, and, when so ordered, remove pavement delineation where shown on the plans or as ordered by the Engineer in accordance with the NYSMUTCD. Unless otherwise shown on the contract plans or proposal or ordered by the Engineer, any course of asphalt concrete, including base and binder courses, upon which traffic will be maintained shall be properly delineated in accordance with this subsection before the end of the working day.
- O. If paint is used, it shall be applied in accordance with the NYSDOT standard specifications. If tape is used, it shall be applied in accordance with the manufacturers recommendations, including the use of a primer where needed. The pavement surface shall be clean and dry and of a surface temperature recommended by the tape manufacturer at the time of tape installation. Tape shall conform to the shape of, and adhere to the surface upon which it is installed. Any tape that fails to adhere to the pavement surface during the period of use shall be replaced by the Contractor at no expense to the County

- P. Inclement weather or other factors may prevent the installation of permanent markings, either by the Contractor or others, in time for the opening to traffic of such pavement or structure. The Contractor, in such cases, shall install temporary pavement delineation as approved and the locations directed by the Engineer.
- Q. Existing Signs – Existing highway signs and supports within the contract limits shall be maintained for the duration of the contract as directed by the Engineer. When necessary the Contractor shall remove signs, store, protect and keep them clean until replaced as directed by the Engineer. Should any signs require relocating at various stages of construction they shall be placed in locations visible to traffic.

Any signs or their component parts which are damaged or lost through negligence on the part of the Contractor shall be replaced and installed by him and at his expense.

- R. Means of Ingress and Egress – The Contractor shall provide and maintain safe and passable means of ingress and egress to and from properties, buildings, intersecting roads at existing or new access points and at bus stops consistent with the work under contract and as directed by the Engineer. When necessary he shall construct temporary steps, crossovers, etc., to permit safe and easy passage through the contract area. He shall provide suitable areas and locations for the loading and unloading of passengers on roads within the contract limits that are serviced by motor buses.
- S. The Contractor shall be liable and responsible for the materials and workmanship required to provide adequate and safe timber structures.
- T. Temporary Paving – The Contractor shall place temporary paving for walks, drives, pavement, etc., where necessary and as directed by the Engineer. Materials shall be placed and compacted to the required thickness as determined by the Engineer and when used for trench paving it shall be maintained to the surface of the surrounding surface or pavement. The Contractor may use steel plates of adequate strength in lieu of timber bridging over trenches with the approval of the Engineer.
- U. Snow and Ice Control – The Contractor shall so maintain the travel way within the contract limits that equipment for plowing of snow and sanding of ice may safely and effectively proceed through the construction area. He shall be responsible for the moving of any plowed snow that impedes or endangers the movement of traffic or hampers the functioning of drainage structures. He shall be responsible for maintaining snow and ice free conditions on any temporary timber facilities constructed by him for public use.
- V. Flagmen – The Contractor shall employ a sufficient number of competent flagmen to guide traffic especially in areas where traffic is confined to one lane of travel or congestion occurs where construction equipment is working. They shall be physically and mentally qualified for the work, instructed and trained in the proper performance of their duties, efficient in their operations and courteous in their dealings with the public. They shall be properly attired for the work and equipped with the standard hand signaling devices for day or night use. When on duty the flagmen shall face traffic and stand clear of traffic lanes. Each flagman shall be so stationed as to be visible to traffic and so located as to give timely warning to motorists approaching the work site. Flagmen shall be instructed that delays to traffic shall not exceed five minutes at any single time unless conditions or circumstances warrant to the contrary.
- W. Plan for Traffic Control – When the location, magnitude or other factors of work scheduled to be done will seriously disrupt the normal, orderly movement of traffic, the Contractor, on order from the Engineer and prior to the start of any contract operations, shall prepare and present a

plan showing his proposed methods for maintaining traffic. Said plan shall be reviewed by representatives of Westchester Medical Center, the Engineer, County Traffic Engineer and officials and/or duly authorized representative of the municipality wherein the project is located. A representative of Westchester Medical Center shall arrange for a meeting of the concerned parties at which time decisions will be made and noted as to acceptable procedures. During the progress of the work the Contractor may request modification of the accepted plan due to unforeseen or unexpected difficulties of whatever nature and such requests will be considered by the representatives of Westchester Medical Center and in the best interests of the traveling public.

- X. Advance Notice of Construction – Before restricting the normal flow of traffic in any way the Contractor shall give 72-hours prior notice of same to the police and fire department(s) within whose jurisdiction the project is located. The Contractor shall assign a responsible employee to give the aforesaid notices.
- Y. Requirements Modified or Waived – Attention is directed to the fact that certain requirements of this specification shall be modified or waived completely depending on the location, nature and extent of the work to be performed under the contract. The Contractor, accordingly, shall govern his amount bid for the item based on his observations and judgment unless details for the work are specified on the plans or in the proposal.

END OF SECTION 01 50 01

SECTION 01 56 39

TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Westchester County Health Care Corporation General Conditions and any Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.
- B. Related Sections:
 - 1. Division 01 Section "Temporary Facilities and Controls" for temporary site fencing.
 - 2. Division 31 Section "Site Clearing" for removing existing trees and shrubs.

1.3 DEFINITIONS

- A. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.
- B. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and indicated on Drawings.
- C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For qualified arborist and tree service firm.
- C. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.
- D. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.
- E. Existing Conditions: Documentation of existing trees and plantings indicated to remain, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed photographs or videotape.
2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plants designated to remain.

1.5 QUALITY ASSURANCE

- A. Arborist Qualifications: Certified Arborist as certified by ISA.
- B. Tree Service Firm Qualifications: An experienced tree service firm that has successfully completed temporary tree and plant protection work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

1.6 PROJECT CONDITIONS

- A. The following practices are prohibited within protection zones:
 1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Foot traffic.
 4. Erection of sheds or structures.
 5. Impoundment of water.
 6. Excavation or other digging unless otherwise indicated.
 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- B. Do not direct vehicle or equipment exhaust toward protection zones.
- C. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones and organic mulch.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Protection-Zone Fencing: Fencing fixed in position and meeting one of the following requirements.
 1. Plastic Protection-Zone Fencing: Plastic construction fencing constructed of high-density extruded and stretched polyethylene fabric with 2-inch maximum opening in pattern and weighing a minimum of 0.4 lb/ft.; remaining flexible from minus 60 to plus 200 deg F; inert to most chemicals and acids; minimum tensile yield strength of 2000 psi and ultimate tensile strength of 2680 psi; secured with plastic bands or galvanized-steel or stainless-steel wire ties; and supported by tubular or T-shape galvanized-steel posts spaced not more than 8 feet apart.
 - a. Height: 4 feet.
 - b. Color: High-visibility orange, nonfading.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

3.2 PREPARATION

- A. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated.
- B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

3.3 TREE- AND PLANT-PROTECTION ZONES

- A. Protection-Zone Fencing: Install protection-zone fencing along edges of protection zones before materials or equipment are brought on the site and construction operations begin in a manner that will prevent people from easily entering protected area except by entrance gates. Construct fencing so as not to obstruct safe passage or visibility at vehicle intersections where fencing is located adjacent to pedestrian walkways or in close proximity to street intersections, drives, or other vehicular circulation.
- B. Maintain protection zones free of weeds and trash.
- C. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations.
- D. Maintain protection-zone fencing in good condition as acceptable and remove when construction operations are complete and equipment has been removed from the site.
 - 1. Do not remove protection-zone fencing, even temporarily, to allow deliveries or equipment access through the protection zone.
 - 2. Temporary access is permitted subject to preapproval in writing by arborist if a root buffer effective against soil compaction is constructed as directed by arborist. Maintain root buffer so long as access is permitted.

3.4 EXCAVATION

- A. General: Excavate at edge of protection zones and for trenches indicated within protection zones according to requirements in Division 31 Section "Earth Moving."
- B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

3.5 REPAIR AND REPLACEMENT

- A. General: Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations.
- B. Soil Aeration: Where directed by Engineer, aerate surface soil compacted during construction. Aerate 10 feet beyond drip line and no closer than 36 inches to tree trunk.

3.6 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove excess excavated material, displaced trees, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION 01 56 39

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.
- B. Related Requirements:
 - 1. Section 01 21 00 "Allowances" for products selected under an allowance.
 - 2. Section 01 25 00 "Substitution Procedures" for procedures for submittal of requests for substitutions for specified products.
 - 3. Section 01 42 00 "References" for applicable industry standards for products specified.
 - 4. Section 01 73 00 "Execution" for installation of products and progress cleaning.
 - 5. Section 01 77 00 "Closeout Procedures" for submitting warranties.
 - 6. Divisions 02 through 33 Sections for specific requirements for warranties on products and installations specified to be warranted.

1.3 DEFINITIONS

- A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
 - 3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification. Manufacturer's published attributes and characteristics of basis-of-design product also establish salient characteristics of products for purposes of evaluating comparable products.
- C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.
- D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:
 1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
 2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.
- E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 01 33 00 "Submittal Procedures."
- F. Substitution: Refer to Section 01 25 00 "Substitution Procedures" for definition and limitations on substitutions.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.
- B. Identification of Products: Except for required labels and operating data, do not attach or imprint manufacturer or product names or trademarks on exposed surfaces of products or equipment that will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface, or, where required for observation following installation, on a visually accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service- or power-operated equipment. Locate on a visually accessible but inconspicuous surface. Include information essential for operation, including the following:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

3. See individual identification Sections in Divisions 21, 22, 23, and 26 for additional equipment identification requirements.

1.5 COORDINATION

- A. Modify or adjust affected work as necessary to integrate work of approved comparable products and approved substitutions.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

- B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and that products are undamaged and properly protected.

- C. Storage:

1. Provide a secure location and enclosure at Project site for storage of materials and equipment.
2. Store products to allow for inspection and measurement of quantity or counting of units.
3. Store materials in a manner that will not endanger Project structure.
4. Store products that are subject to damage by the elements under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation and with adequate protection from wind.
5. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
7. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
8. Protect stored products from damage and liquids from freezing.

1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. **Manufacturer's Warranty:** Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
 2. **Special Warranty:** Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.
- B. **Special Warranties:** Prepare a written document that contains appropriate terms and identification, ready for execution.
1. **Manufacturer's Standard Form:** Modified to include Project-specific information and properly executed.
 2. **Specified Form:** When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
 3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
- C. **Submittal Time:** Comply with requirements in Section 01 77 00 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. **General Product Requirements:** Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. **Standard Products:** If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
 6. **Or Equal:** For products specified by name and accompanied by the term "or equal," "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.
 - a. Submit additional documentation required by Architect in order to establish equivalency of proposed products. Unless otherwise indicated, evaluation of "or equal" product status is by the Architect, whose determination is final.
- B. **Product Selection Procedures:**
1. **Sole Product:** Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following..."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following..."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following..."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
 - a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following..."
 - b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following..."
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
 - a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following..."
 - b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
 - a. For approval of products by unnamed manufacturers, comply with requirements in Section 01 25 00 "Substitution Procedures" for substitutions for convenience.

- C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 "Substitution Procedures" for proposal of product.
- D. Visual Selection Specification:
1. Standard Range: Where Specifications include the phrase "as selected by Architect from manufacturer's standard range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes only standard items; custom, designer, or premium items will not be considered.
 2. Full Range: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes standard as well as custom, designer, and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: Comparable products will only be considered in instances where Specification Sections explicitly state that comparable products are allowed. Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with these requirements:
1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant product qualities include attributes such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, compliance with sustainable design requirements specified, and other specific features and requirements.
 2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, sustainable design attributes, and other specific features and requirements.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.
- B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 01 33 00 "Submittal Procedures."
1. Form of Approval of Submittal: As specified in Section 01 33 00 "Submittal Procedures."
 2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

- C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

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SECTION 01 73 00

EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Installation of the Work.
 - 4. Cutting and patching.
 - 5. Progress cleaning.
 - 6. Starting and adjusting.
 - 7. Protection of installed construction.
- B. Related Requirements:
 - 1. Section 01 10 00 "Summary" for limits on use of Project site.
 - 2. Section 01 33 00 "Submittal Procedures" for submitting surveys.
 - 3. Section 01 77 00 "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, replacing defective work, and final cleaning.
 - 4. Section 07 84 13 "Penetration Firestopping" for patching penetrations in fire-rated construction.

1.3 DEFINITIONS

- A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.
- B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

1.4 PREINSTALLATION MEETINGS

- A. Cutting and Patching Conference: Conduct conference at Project site.
 - 1. Prior to submitting cutting and patching plan, review extent of cutting and patching anticipated and examine procedures for ensuring satisfactory result from cutting and patching work. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with cutting and patching to attend, including the following:

- a. Contractor's superintendent.
 - b. Trade supervisor responsible for cutting operations.
 - c. Trade supervisor(s) responsible for patching of each type of substrate.
 - d. Mechanical, electrical, and utilities subcontractors' supervisors, to the extent each trade is affected by cutting and patching operations.
2. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
- B. Layout Conference: Conduct conference at Project site.
1. Prior to establishing layout of new perimeter and structural column grid(s), review building location requirements. Review benchmark, control point, and layout and dimension requirements. Inform Architect of scheduled meeting. Require representatives of each entity directly concerned with Project layout to attend, including the following:
 - a. Contractor's superintendent.
 - b. Professional surveyor responsible for performing Project surveying and layout.
 2. Review meanings and intent of dimensions, notes, terms, graphic symbols, and other layout information indicated on the Drawings.
 3. Review requirements for including layouts on Shop Drawings and other submittals.
 4. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor.
- B. Certified Surveys: Submit two paper copies signed by land surveyor as well as a PDF electronic file of scanned prints.
- C. Certificates: Submit certificate signed by land surveyor, certifying that location and elevation of improvements comply with requirements.
- D. Written Reports: Submit written reports listing conditions detrimental to performance of the Work as specified in "Examination" Article of this Section.
- E. Cutting and Patching Plan: Submit plan describing procedures at least 10 days prior to the time cutting and patching will be performed. Include the following information:
 1. Extent: Describe reason for and extent of each occurrence of cutting and patching.
 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building appearance and other significant visual elements.
 3. Products: List products to be used for patching and firms or entities that will perform patching work.
 4. Dates: Indicate when cutting and patching will be performed.
 5. Utilities and Mechanical and Electrical Systems: List services and systems that cutting and patching procedures will disturb or affect. List services and systems that will be relocated and those that will be temporarily out of service. Indicate length of time permanent services and systems will be disrupted.

- a. Include description of provisions for temporary services and systems during interruption of permanent services and systems.

1.6 CLOSEOUT SUBMITTALS

- A. Final Property Survey: Submit 10 paper copies showing the Work performed and record survey data as well as a PDF electronic file.

1.7 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.
- B. Professional Engineer Qualifications: Refer to Section 01 40 00 "Quality Requirements."
- C. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
 1. Structural Elements: When cutting and patching structural elements, or when encountering the need for cutting and patching of elements whose structural function is not known, notify Architect of locations and details of cutting and await directions from Architect before proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their load-carrying capacity or increase deflection.
 2. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operational elements include the following:
 - a. Primary operational systems and equipment.
 - b. Fire separation assemblies.
 - c. Air or smoke barriers.
 - d. Fire-suppression systems.
 - e. Plumbing piping systems.
 - f. Mechanical systems piping and ducts.
 - g. Control systems.
 - h. Communication systems.
 - i. Fire-detection and -alarm systems.
 - j. Conveying systems.
 - k. Electrical wiring systems.
 - l. Operating systems of special construction.
 3. Other Construction Elements: Do not cut and patch other construction elements or components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety. Other construction elements include but are not limited to the following:
 - a. Water, moisture, or vapor barriers.
 - b. Membranes and flashings.
 - c. Sprayed fire-resistive material.
 - d. Equipment supports.

- e. Piping, ductwork, vessels, and equipment.
 - f. Noise- and vibration-control elements and systems.
4. Visual Elements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch exposed construction in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
- D. Manufacturer's Installation Instructions: Obtain and maintain on-site manufacturer's written recommendations and instructions for installation of specified products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Comply with requirements specified in other Sections.
- B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
 - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.
- C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, gas service piping, and water-service piping; underground electrical services; and other utilities.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
 3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
1. Description of the Work, including Specification Section number and paragraph, and Drawing sheet number and detail, where applicable.
 2. List of detrimental conditions, including substrates.
 3. List of unacceptable installation tolerances.
 4. Recommended corrections.
- D. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of Contractor, submit a Request for Interpretation to Architect according to requirements in Section 01 31 00 "Project Management and Coordination."
- E. Surface and Substrate Preparation: Comply with manufacturer's written recommendations for preparation of substrates to receive subsequent work.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions. If discrepancies are discovered, notify Architect promptly.
- B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.

2. Establish limits on use of Project site.
 3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 4. Inform installers of lines and levels to which they must comply.
 5. Check the location, level and plumb, of every major element as the Work progresses.
 6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Identification: Owner will identify existing benchmarks, control points, and property corners.
- B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
1. Do not change or relocate existing benchmarks or control points without prior written approval of Architect. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- C. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
 3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.
- D. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

- E. Final Property Survey: Engage a land surveyor to prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
 - 1. Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.
 - 2. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

3.5 INSTALLATION

- A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb, and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.
 - 4. Maintain minimum headroom clearance of 96 inches in occupied spaces and 90 inches in unoccupied spaces, unless otherwise indicated on Drawings.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure satisfactory results as judged by Architect. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations, so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy of type expected for Project.
- E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on-site and placement in permanent locations.
- F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise levels.
- G. Noise Control: Perform construction operations to minimize noise. Perform noise-causing work in less sensitive hours of the day or week as directed by the Owner. Limit noise as may be required by the authorities having jurisdiction.
- H. Templates: Obtain and distribute to the parties involved templates for Work specified to be factory prepared and field installed. Check Shop Drawings of other portions of the Work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- I. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 2. Allow for building movement, including thermal expansion and contraction.
 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- J. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together to form hairline joints.
- K. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.
- L. Repair or remove and replace damaged, defective, or nonconforming Work.
1. Comply with Section 01 77 00 "Closeout Procedures" for repairing or removing and replacing defective Work.

3.6 CUTTING AND PATCHING

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties.
- C. Temporary Support: Provide temporary support of Work to be cut.
- D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
 - b. Restore damaged pipe covering to its original condition.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint coat over entire unbroken surface containing the patch, corner to corner of wall and edge to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- G. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.
- 3.7 PROGRESS CLEANING
- A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly. Dispose of materials lawfully.
1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 2. Do not hold waste materials more than seven days during normal weather or three days if the temperature is expected to rise above 80 deg F.
 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
 - a. Use containers intended for holding waste materials of type to be stored.

- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down sewers or into waterways. Comply with waste disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: Comply with qualification requirements in Section 01 40 00 "Quality Requirements."

3.9 PROTECTION AND REPAIR OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.
- C. Comply with manufacturer's written instructions for temperature and relative humidity.

END OF SECTION 01 73 00

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SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for the following:
 - 1. Recycling nonhazardous construction waste.
 - 2. Disposing of nonhazardous construction waste.
- B. Related Requirements:
 - 1. Section 04 20 00 "Unit Masonry" for disposal requirements for masonry waste.
 - 2. Section 04 43 13.16 "Adhered Stone Masonry Veneer" for disposal requirements for excess stone and stone waste.

1.3 DEFINITIONS

- A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.
- C. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition and construction waste becomes property of Contractor.

1.5 ACTION SUBMITTALS

- A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed.

1.6 INFORMATIONAL SUBMITTALS

- A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste recycled, both estimated and actual in tons.
 - 5. Total quantity of waste recycled as a percentage of total waste.
- B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- C. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- D. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- E. Qualification Data: For waste management coordinator.

1.7 QUALITY ASSURANCE

- A. Waste Management Coordinator Qualifications: Experienced firm, or individual employed and assigned by General Contractor, with a record of successful waste management coordination of projects with similar requirements. Superintendent may serve as Waste Management Coordinator.
- B. Regulatory Requirements: Comply with transportation and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan including responsibilities of each contractor and waste management coordinator.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.8 WASTE MANAGEMENT PLAN

- A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis.

Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

- B. Waste Identification: Indicate anticipated types and quantities of site clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of each type of waste, quantity for each means of recovery, and handling and transportation procedures.
 - 1. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
 - 2. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
 - 3. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location where materials separation will be performed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General: Achieve minimum end-of-Project rates for salvage/recycling of 75 percent by weight of total nonhazardous solid waste generated by the Work. Practice efficient waste management in the use of materials in the course of the Work. Use all reasonable means to divert construction and demolition waste from landfills and incinerators. Facilitate recycling and salvage of materials, including the following:
 - 1. Construction Waste:
 - a. Masonry and CMU.
 - b. Lumber.
 - c. Wood sheet materials.
 - d. Wood trim.
 - e. Metals.
 - f. Roofing.
 - g. Insulation.
 - h. Carpet and pad.
 - i. Gypsum board.
 - j. Piping.
 - k. Electrical conduit.
 - l. Packaging: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - 1) Paper.
 - 2) Cardboard.
 - 3) Boxes.
 - 4) Plastic sheet and film.
 - 5) Polystyrene packaging.
 - 6) Wood crates.
 - 7) Wood pallets.
 - 8) Plastic pails.

- m. Construction Office Waste: Regardless of salvage/recycle goal indicated in "General" Paragraph above, salvage or recycle 100 percent of the following construction office waste materials:
 - 1) Paper.
 - 2) Aluminum cans.
 - 3) Glass containers.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
 - 1. Comply with operation, termination, and removal requirements in Section 01 50 00 "Temporary Facilities and Controls."
- B. Waste Management Coordinator: Engage a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan.
- C. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.
 - 1. Distribute waste management plan to everyone concerned within three days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
 - 2. Comply with Section 01 50 00 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 RECYCLING CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- C. Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan.

1. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - a. Inspect containers and bins for contamination and remove contaminated materials if found.
2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
4. Store components off the ground and protect from the weather.
5. Remove recyclable waste from Owner's property and transport to recycling receiver or processor as often as required to prevent overfilling bins.

3.3 RECYCLING CONSTRUCTION WASTE

A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

B. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

C. Gypsum Board: Stack large clean pieces on wood pallets or in container and store in a dry location.

1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.

D. Paint: Seal containers and store by type.

3.4 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 01 74 19

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:
 - 1. Substantial Completion procedures.
 - 2. Final completion procedures.
 - 3. Warranties.
 - 4. Final cleaning.
 - 5. Correction/repair of the Work.
- B. Related Requirements:
 - 1. Section 01 29 00 "Payment Procedures" for requirements for Applications for Payment for Substantial Completion and Final Completion.
 - 2. Section 01 32 33 "Photographic Documentation" for submitting a record disc of construction photographs to the Owner.
 - 3. Section 01 73 00 "Execution" for progress cleaning of Project site.
 - 4. Section 01 78 23 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
 - 5. Section 01 78 39 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 6. Section 01 79 00 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.3 DEFINITIONS

- A. List of Incomplete Items (Contractor's Punch List): Contractor-prepared list of items to be completed or corrected, prepared for the Architect's use prior to Architect's inspection, to determine if the Work is substantially complete.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of cleaning agent.
- B. Contractor's List of Incomplete Items (Punch List): Initial submittal at Substantial Completion.
 - 1. Initial submittal as indicated.

2. Submittal of revised punch list as indicated.

C. Certified List of Incomplete Items (Punch List): Final submittal at Final Completion.

1.5 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items required by other Sections.

1.7 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items (Punch List): Prepare and submit a comprehensive list of incomplete or nonconforming work (punch list) to Architect in advance of Architect's inspection to determine Substantial Completion. Base punch list on Contractor's comprehensive inspection of the Project. Use PlanGrid or Bluebeam software to create punch list.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include use and occupancy (U&O) permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Label with manufacturer's name and model number.
 - a. Schedule of Maintenance Material Items: Prior to submission of maintenance material items, prepare and submit schedule of maintenance material items, including name and quantity of each item and name and number of related Specification Section. Submittal is for Owner's and Architect's review prior to submission of items.
 - b. Obtain Owner's signature for receipt of maintenance material submittals.
5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

- C. Procedures Prior to Requesting Inspection for Determining Date of Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise Owner of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Advise Owner of changeover in utility services.
 6. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
 7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 8. Complete final cleaning requirements.
 9. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect and Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Accompany Architect and Owner on inspection and note differences between the original Contractor's list of incomplete items (punch list) and Architect's and Owner's observations.
 2. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 3. Results of completed inspection will form the basis of requirements for Final Completion.
 4. Submit an electronic PDF of revised Contractor's list of incomplete items (punch list) to Owner and Architect within seven calendar days of inspection.

1.8 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:
1. Submit a final Application for Payment in accordance with Section 01 29 00 "Payment Procedures."
 2. Certified List of Incomplete Items (Punch List): Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 01 79 00 "Demonstration and Training."
 5. Submit pest-control final inspection report.
 6. Submit Final Completion photographic documentation.

- B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Owner will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
 - 1. Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.9 CONTRACTOR'S LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
 - 2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Page number.
 - 4. Submit list of incomplete items (punch list) in the following format:
 - a. PDF Electronic File: Architect will return annotated file.

1.10 SUBMITTAL OF PROJECT WARRANTIES

- A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.
- C. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.
- D. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.
 - 1. Submit on digital media acceptable to Owner and Architect.
- E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 - 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are not planted, mulched, or paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.
 - i. Sweep concrete floors broom clean in unoccupied spaces.
 - j. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - k. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - l. Remove labels that are not permanent.
 - m. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

- o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - p. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - q. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.
 - r. Clean strainers.
 - s. Leave Project clean and ready for occupancy.
- C. Pest Control: Comply with pest control requirements in Section 01 50 00 "Temporary Facilities and Controls." Prepare written report.
- D. Construction Waste Disposal: Comply with waste-disposal requirements in Section 01 74 19 "Construction Waste Management and Disposal."

3.2 CORRECTION/REPAIR OF THE WORK

- A. Complete repair and restoration operations required by Section 01 73 00 "Execution" before requesting inspection for determination of Substantial Completion.
- B. Repair, or remove and replace, defective construction. Restore damaged substrates and finishes. Repair components that do not operate properly. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
- 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.
 - 3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
 - 4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

END OF SECTION 01 77 00

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory manuals.
 - 2. Emergency manuals.
 - 3. Systems and equipment operation manuals.
 - 4. Systems and equipment maintenance manuals.
 - 5. Product maintenance manuals.
- B. Related Requirements:
 - 1. Section 01 33 00 "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Divisions 02 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

- A. Submit operation and maintenance manuals indicated. Provide content for each manual as specified in individual Specification Sections, and as reviewed and approved at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.
 - 1. Architect will comment on whether content of operation and maintenance submittals is acceptable.
 - 2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.
- B. Format: Submit operation and maintenance manuals in the following format:

1. Submit electronic files on digital media acceptable to Owner and Architect. Enable reviewer comments on draft submittals.
 2. Submit one paper copy to Owner with copy of transmittal to Architect.
- C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.
- D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.
1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.
- E. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

1.5 COORDINATION

- A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

1.6 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.
1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
 2. File Names and Bookmarks: Bookmark individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.
- B. Manuals, Paper Copy: Submit manuals in the form of hard-copy, bound and labeled volumes.
1. Binders: Heavy-duty, three-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

- b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, subject matter of contents, and indicate Specification Section number on bottom of spine. Indicate volume number for multiple-volume sets.
2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section of the manual. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.
3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software storage media for computerized electronic equipment. Enclose title pages and directories in clear plastic sleeves.
4. Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.
5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

1.7 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

- A. Organization of Manuals: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 1. Title page.
 2. Table of contents.
 3. Manual contents.
- B. Title Page: Include the following information:
 1. Subject matter included in manual.
 2. Name and address of Project.
 3. Name and address of Owner.
 4. Date of submittal.
 5. Name and contact information for Contractor.
 6. Name and contact information for Architect.
 7. Names and contact information for major consultants to the Owner and Architect that designed the systems contained in the manuals.
 8. Cross-reference to related systems in other operation and maintenance manuals.
- C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.
 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.
- E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."

1.8 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY MANUAL

- A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals. List items and their location to facilitate ready access to desired information. Include the following:
 - 1. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.
 - 2. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.
 - 3. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

1.9 EMERGENCY MANUALS

- A. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.
- B. Content: Organize manual into a separate section for each of the following:
 - 1. Type of emergency.
 - 2. Emergency instructions.
 - 3. Emergency procedures.
- C. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
 - 1. Fire.
 - 2. Flood.
 - 3. Gas leak.
 - 4. Water leak.
 - 5. Power failure.
 - 6. Water outage.
 - 7. System, subsystem, or equipment failure.
 - 8. Chemical release or spill.
- D. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.
- E. Emergency Procedures: Include the following, as applicable:

1. Instructions on stopping.
2. Shutdown instructions for each type of emergency.
3. Operating instructions for conditions outside normal operating limits.
4. Required sequences for electric or electronic systems.
5. Special operating instructions and procedures.

1.10 SYSTEMS AND EQUIPMENT OPERATION MANUALS

- A. Systems and Equipment Operation Manual: Assemble a complete set of data indicating operation of each system, subsystem, and piece of equipment not part of a system. Include information required for daily operation and management, operating standards, and routine and special operating procedures.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:
1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
 2. Performance and design criteria if Contractor has delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. License requirements including inspection and renewal dates.
- C. Descriptions: Include the following:
1. Product name and model number. Use designations for products indicated on Contract Documents.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- D. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Equipment or system break-in procedures.
 3. Routine and normal operating instructions.
 4. Regulation and control procedures.
 5. Instructions on stopping.
 6. Normal shutdown instructions.

7. Seasonal and weekend operating instructions.
 8. Required sequences for electric or electronic systems.
 9. Special operating instructions and procedures.
- E. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- F. Piped Systems: Diagram piping as installed, and identify color coding where required for identification.

1.11 SYSTEMS AND EQUIPMENT MAINTENANCE MANUALS

- A. Systems and Equipment Maintenance Manuals: Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Include manufacturers' maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.
1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
 2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.
- B. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranties and bonds as described below.
- C. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Manufacturers' Maintenance Documentation: Include the following information for each component part or piece of equipment:
1. Standard maintenance instructions and bulletins; include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - a. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.
 2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 3. Identification and nomenclature of parts and components.
 4. List of items recommended to be stocked as spare parts.
- E. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
 2. Troubleshooting guide.
 3. Precautions against improper maintenance.
 4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 5. Aligning, adjusting, and checking instructions.
 6. Demonstration and training video recording, if available.
- F. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
- G. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
- H. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
- I. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.
- J. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in record Drawings to ensure correct illustration of completed installation.
1. Do not use original project record documents as part of maintenance manuals.
- 1.12 PRODUCT MAINTENANCE MANUALS
- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.
- C. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual and drawing or schedule designation or identifier where applicable.
- D. Product Information: Include the following, as applicable:
1. Product name and model number.
 2. Manufacturer's name.

3. Color, pattern, and texture.
 4. Material and chemical composition.
 5. Reordering information for specially manufactured products.
- E. Maintenance Procedures: Include manufacturer's written recommendations and the following:
1. Inspection procedures.
 2. Types of cleaning agents to be used and methods of cleaning.
 3. List of cleaning agents and methods of cleaning detrimental to product.
 4. Schedule for routine cleaning and maintenance.
 5. Repair instructions.
- F. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- G. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
1. Include procedures to follow and required notifications for warranty claims.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 23

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. Record Drawings.
 - 2. Record specifications.
 - 3. Record Product Data.
 - 4. Miscellaneous record submittals.
- B. Related Requirements:
 - 1. Section 01 73 00 "Execution" for final property survey.
 - 2. Section 01 77 00 "Closeout Procedures" for general closeout procedures.
 - 3. Section 01 78 23 "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 4. Divisions 02 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 CLOSEOUT SUBMITTALS

- A. Closeout Submittals, General: Submit record submittals specified in this Section on digital media acceptable to Owner and Architect. Provide paper copies when requested by Owner.
- B. Record Drawings: Comply with the following:
 - 1. Number of Copies: Submit copies of Record Drawings as follows:
 - a. Final Submittal:
 - 1) Submit PDF electronic files of scanned Record Prints and one set of file prints.
 - 2) Print each drawing, whether or not changes and additional information were recorded.
- C. Record Specifications: Submit annotated PDF electronic files of Project's Specifications, including addenda and Contract modifications.
- D. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.
- E. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities. Submit annotated PDF electronic files and directories of each submittal.
- F. Reports: Submit written report indicating items incorporated into Project Record Documents concurrent with progress of the Work, including revisions, concealed conditions, field changes, product selections, and other notations incorporated.

1.4 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.
 1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Accurately record information in an acceptable drawing technique.
 - c. Record data as soon as possible after obtaining it.
 - d. Record and check the markup before enclosing concealed installations.
 - e. Cross-reference record prints to corresponding photographic documentation.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Architect's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
 4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

- B. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
 - 1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 - 2. Format: Submit record drawings as annotated PDF electronic file.
 - 3. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

1.5 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 - 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 - 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 - 5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.
- B. Format: Submit record specifications as annotated PDF electronic file.

1.6 RECORD PRODUCT DATA

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.
- B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 - 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 - 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 - 3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.
- C. Format: Submit Record Product Data as annotated PDF electronic file.
 - 1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.7 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file.
 - 1. Include miscellaneous record submittals directory organized by Specification Section number and title, electronically linked to each item of miscellaneous record submittals.

1.8 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 78 39

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 2. Manufacturers' pre-produced demonstration and training video recordings.
- B. Related Requirements:
 - 1. Divisions 02 through 33 Sections for specific requirements for demonstration and training for systems, equipment, and products specified in those Sections.

1.3 INFORMATIONAL SUBMITTALS

- A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.
 - 1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.
 - 2. Submit PDF electronic file of instructional program outline on digital media acceptable to Owner and Architect.
- B. Qualification Data: For facilitator, instructor, and videographer.
- C. Attendance Record: For each training module, submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

- A. Training Manual: At completion of training, submit complete training manual(s) for Owner's use in PDF electronic file format on digital media acceptable to Owner and Architect.

- B. Preproduced Demonstration and Training Video Recordings: Submit on digital media acceptable to Owner and Architect within seven calendar days of end of each training module.
- C. Demonstration and Training Video Recordings: Submit on digital media acceptable to Owner and Architect within seven days of end of each training module.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name and address of videographer.
 - c. Name of Architect.
 - d. Name of Contractor.
 - e. Date of video recording.
 - 2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
 - 3. At completion of training, submit complete training manual(s) for Owner's use prepared in same paper and PDF file format required for operation and maintenance manuals specified in Section 01 78 23 "Operation and Maintenance Data."

1.5 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 01 40 00 "Quality Requirements," experienced in operation and maintenance procedures and training.
- C. Videographer Qualifications: A professional videographer who is experienced photographing demonstration and training events similar to those required.
- D. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.
 - 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
 - 3. Review required content of instruction.
 - 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.7 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.
- B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:
 - 1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
 - a. System, subsystem, and equipment descriptions.
 - b. Performance and design criteria if Contractor is delegated design responsibility.
 - c. Operating standards.
 - d. Regulatory requirements.
 - e. Equipment function.
 - f. Operating characteristics.
 - g. Limiting conditions.
 - h. Performance curves.
 - 2. Documentation: Review the following items in detail:
 - a. Emergency manuals.
 - b. Systems and equipment operation manuals.
 - c. Systems and equipment maintenance manuals.
 - d. Product maintenance manuals.
 - e. Project Record Documents.
 - f. Identification systems.
 - g. Warranties and bonds.
 - h. Maintenance service agreements and similar continuing commitments.
 - 3. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
 - 4. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.

- d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
5. Adjustments: Include the following:
- a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.
 - d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
- a. Diagnostic instructions.
 - b. Test and inspection procedures.
7. Maintenance: Include the following:
- a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning.
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.
8. Repairs: Include the following:
- a. Diagnosis instructions.
 - b. Repair instructions.
 - c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
 - d. Instructions for identifying parts and components.
 - e. Review of spare parts needed for operation and maintenance.
- 1.8 PREPARATION
- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 01 78 23 "Operation and Maintenance Data."
 - B. Set up instructional equipment at instruction location.

1.9 INSTRUCTION

- A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.
- B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
 - 2. Owner will furnish Contractor with names and positions of participants.
- C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.
 - 1. Schedule training with Owner with at least seven days' advance notice.
- D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.
- E. Evaluation: At conclusion of each training module, assess and document each participant's mastery of module by use of a demonstration performance-based test.
- F. Cleanup: Collect used and leftover educational materials and give to Owner. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.10 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 1. At beginning of each training module, record each chart containing learning objective and lesson outline.
- B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode with vibration reduction technology.
 - 1. Submit video recordings on CD-ROM or thumb drive.
 - 2. File Hierarchy: Organize folder structure and file locations according to Project Manual table of contents. Provide complete screen-based menu.
 - 3. File Names: Utilize file names based on name of equipment generally described in video segment, as identified in Project specifications.
 - 4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the equipment demonstration and training recording that describes the following for each Contractor involved on the Project, arranged according to Project Manual table of contents:
 - a. Name of Contractor/Installer.
 - b. Business address.

- c. Business phone number.
 - d. Point of contact.
 - e. Email address.
- C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.
- 1. Film training session(s) in segments not to exceed 15 minutes.
 - a. Produce segments to present a single significant piece of equipment per segment.
 - b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
 - c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.
- D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.
- 1. Furnish additional portable lighting as required.
- E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.
- F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.
- G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 79 00

SECTION 01 81 12

SUSTAINABLE REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes general requirements and procedures for compliance with certain USGBC LEED prerequisites and credits needed for Project to obtain LEED- certification based on the USGBC's LEED v4 Homes & Multifamily Midrise program.
 - 1. Other LEED prerequisites and credits needed to obtain LEED certification depend on product selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests and comparable product requests.
 - 2. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification depend on Architect's design and other aspects of Project that are not part of the Work of the Contract.
 - 3. A copy of the LEED v4 Project Workbook is attached at the end of this Section for information only.
 - 4. A copy of the LEED v4 for Homes Design and Construction guide is available to download from the USGBC website and is intended for informational purposes only.
- B. Related Requirements:
 - 1. Divisions 3-10, 12, 31.60 Foundations, 32.10 Paving, 32.30 Site Improvements, and 32.9 Planting Sections for LEED requirements specific to the work of each of these Sections. MEP and elevators are excluded. Requirements may or may not include reference to LEED. Comply with requirements specified in Division 01 Section "Sustainable Design Requirements."

1.3 DEFINITIONS

- A. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
- B. Local production: Materials that are extracted, processed and manufactured within a radius of 100 miles from Project site.

- C. **Recycled Content:** The recycled content value of a material assembly shall be determined by %. A product may qualify if it meets 25% post-consumer waste recycled content or 50% pre-consumer waste recycled content. At least 90% of the component must comply for credit.
 - 1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
 - 2. "Pre-consumer (or post-industrial)" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.
- D. **Salvaged Materials or Reused Materials:** Construction materials recovered from existing buildings or construction sites and reused. Common salvaged materials include structural beams and posts, flooring, doors, furniture, cabinetry, brick, and decorative items.
- E. **Replacement value:** Estimated cost of replacing a used product. This value may be equal to the cost of a similar new product or based on a new product with comparable features.
- F. **Rapidly Renewable Materials:** Agricultural products, both fiber and animal, that take 10 years or less to grow or raise and can be harvested in a sustainable fashion.
- G. **Forest Stewardship Council (FSC):** Certification by the Forest Stewardship Council (FSC) is a seal of approval awarded to forest managers who adopt environmentally and socially responsible forest management practices, and to companies that manufacture and sell products made from certified wood.
- H. **Tropical Wood:** grown in a country that lies between the Tropics of Cancer and Capricorn.
- I. **Volatile Organic Compounds (VOCs):** Carbon compounds (excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides and carbonates, and ammonium carbonate) that participate in atmospheric photochemical reactions. The compounds vaporize (become a gas) at normal room temperatures.
- J. **Urea Formaldehyde (UF):** Combination of urea and formaldehyde that is used in some glues and may emit formaldehyde at room temperature.
- K. **Phenol Formaldehyde:** Off-gases only at high temperatures, is used for exterior products, although many of those products are suitable for interior applications.
- L. **FloorScore Program:** The FloorScore program, developed by the Resilient Floor Covering Institute (RFCI) in conjunction with Scientific Certification Systems (SCS), tests and certifies flooring products for compliance with indoor air quality emission requirements adopted in California.
- M. **Carpet and Rug Institute (CRI) Green Label Plus Testing Program:** Carpet and Rug Institute (CRI) is a trade organization representing the carpet and rug industry. Green Label Plus is an independent testing program that identifies carpets with very low VOC emissions.
- N. **State of California Specification Section 01350:** This standard practice document specifies carpet emissions testing criteria that will satisfy the credit requirements.
- O. **State of California Air Resources Board (CARB) requirements for ultra-low-emitting formaldehyde (ULEF) resins or no-added formaldehyde based resins.**

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Respond to questions and requests from Architect and the LEED Green Rater regarding LEED credits that are the responsibility of the Contractor, that depend on product selection or product qualities, or that depend on Contractor's procedures until the USGBC has made its determination on the project's LEED certification application. Document responses as informational submittals.

1.5 ACTION SUBMITTALS

- A. General: Submit additional LEED submittals required by other Specification Sections.
- B. Provide sustainability criteria on submittals forms (i.e. CARB, CA Section 01350 compliance, VOC content).
- C. Applicable Divisions: CSI MasterFormat 2004 Edition Divisions 03-10, 12, 31.60 Foundations, 32.10 Paving, 32.30 Site Improvements, and 32.9 Planting Sections for LEED requirements specific to the work of each of these Sections. MEP and elevators are excluded.
- D. LEED Documentation Submittals:
 - 1. Prerequisite EA Minimum Energy Performance:
 - a. Meet the LEED v4 Multifamily Midrise Thermal Enclosure Checklist https://www.usgbc.org/sites/default/files/ea_p_1_alternative_compliance_path_for_midrise_2010_0.pdf
 - 2. Prerequisite MR Certified Tropical Wood: all wood in the building must be non-tropical, reused or reclaimed comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
 - a. If any tropical wood (i.e. IPE, Sapele, Lauan) is used, provide Chain of Custody (COC) tracking FSC certification from source to site.
 - 3. Prerequisite MR Durability Management:
 - a. Builder to verify ENERGY STAR for HOMES v3, Water Management System Builder Checklist items. https://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/water_mgmt_sys_bldr_req.pdf?1967-a193
 - b. Submittals for nonpaper-faced backer board or product meeting ASTM D 3273 for areas behind and above tub/showers.
 - c. Submittals for water-resistant flooring in kitchen, bathrooms, laundry, spa areas.
 - d. Submittals for water-resistant flooring in entryways and within 3 feet of exterior doors.
 - e. Submittals drain and drain pan or drain pan and auto shut off or flow restrictors for tank water heaters.
 - f. Submittals drain and drain pan or drain pan and auto shut off or flow restrictors for clothes washers.
 - g. Protect stored on-site and installed absorptive materials from moisture damage.
 - 4. Credit MR Construction Waste Management: Comply with Division 01 Section "Construction Waste Management and Disposal."

- a. Provide calculations of construction debris with % of weight or volume diverted from landfills or incinerators by recycling (sorting on or off-site is acceptable). Also must be separated by material stream with at least 5 different materials.
5. Credit MR Environmentally Preferable Products: Product data and certification letter indicating percentages of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
 - a. Retain cutsheets to document the listed products' recycled content for all insulation (excluding pipe insulation).
6. Credit MR Local Production: Product data indicating location of material for local production.
 - a. Record manufacturers' names and locations for locally produced aggregate for concrete and foundation.
 - b. Provide % of total aggregate that is local.
 - c. Indicate the distance (as the crow flies) on a map from the location of extraction, processing or manufacturing of aggregate to the job site location.
7. Prerequisite EQ Combustion Venting:
 - a. Provide submittal for Carbon Monoxide (CO) detectors located in each apartment or on each floor (for villas), hard-wired with battery backup.
 - b. Provide submittal for Carbon Monoxide (CO) detectors located in rooms that share a door with the garage, hard-wired with battery backup.
8. Prerequisite EQ Air filtering:
 - a. Product data for temporary filtration media if permanently installed air handlers are used during construction. Permanent filtration media with a minimum efficiency reporting value (MERV) of 10 (8 is required, 10 is specified) must be used at each return air grille, as determined by ASHRAE 52.2.
 - b. Product data for filtration media replaced immediately prior to occupancy.
9. Prerequisite EQ Environmental Tobacco Smoke: provide signage for smoking prohibition designated smoking areas.
10. Credit EQ Contaminant Control:
 - a. Signed statement describing the building air flush-out procedures, including the dates when flush-out was begun and completed (min. 48 hrs) and statement that filtration media was replaced after flush-out.
 - b. Cover HVAC registers during construction and remove any dust or debris after construction ends and prior to occupancy.
11. Credit EQ Low-Emitting Products:
 - a. Provide submittals for interior paints & coatings, flooring, insulation, and site-applied adhesives & sealants with CA Section 01350 compliance.
 - b. Maintain a list of all composite wood products tested to meet California Air Resources Board (CARB) requirements for ULEF resins or no-added formaldehyde-based resins.

12. Credit IEQ 4.2: Maintain a listing of each indoor paint and coating product used inside the weatherproofing system; include each products manufacturer's name, product name, specific VOC data (g/L less water), and the corresponding allowable VOC from the reference standard. Provide product MSDS and/or product manufacture data sheet verifying VOC content limit.

1.6 QUALITY ASSURANCE

- A. LEED Consultant: Engage an experienced LEED-Accredited Professional to coordinate LEED requirements. LEED Consultant may also serve as waste management coordinator.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Provide products and procedures necessary to obtain LEED credits required in this Section. Although other Sections may specify some requirements that contribute to LEED credits, the Contractor shall determine additional materials and procedures necessary to obtain LEED credits indicated.

2.2 RECYCLED CONTENT OF MATERIALS

- A. Credit MR: Environmentally Preferable Products: Product data and certification letter indicating percentages of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
 1. Retain cutsheets to document the listed products' recycled content for all insulation (excluding pipe insulation).

2.3 LOCAL PRODUCTION

- A. Local Production: Product data indicating location of material for local production.
 1. Record manufactures' names and locations for locally produced aggregate for concrete and foundation.
 2. Provide % of total aggregate that is local.
 3. Indicate the distance (as the crow flies) on a map from the location of extraction, processing or manufacturing of aggregate to the job site location.

2.4 CERTIFIED WOOD

- A. PREREQUISITE MR Certified Tropical Wood: all wood in the building must be non-tropical, reused or reclaimed, if tropical, it must comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
 1. If any tropical wood (i.e. IPE, Sapele, Lauan) is used, provide Chain of Custody (COC) tracking FSC certification from source to site.
 2. Wood-based materials include, but are not limited to, the following materials when made from wood, engineered wood products, or wood-based panel products:

- a. Rough carpentry.
- b. Miscellaneous carpentry.
- c. Heavy timber construction.
- d. Wood decking.
- e. Metal-plate-connected wood trusses.
- f. Structural glued-laminated timber.
- g. Finish carpentry.
- h. Architectural woodwork.
- i. Wood paneling.
- j. Wood veneer wall covering.
- k. Wood flooring.
- l. Wood lockers.
- m. Wood cabinets.
- n. Furniture.

2.5 LOW-EMITTING MATERIALS

A. Credit EQ Low-Emitting Products:

1. Provide submittals for interior paints & coatings, flooring, insulation, and site-applied adhesives & sealants with CA Section 01350 compliance.
2. Maintain a list of all composite wood products tested to meet California Air Resources Board (CARB) requirements for ULEF resins or no-added formaldehyde-based resins.

PART 3 - EXECUTION

3.1 MEASUREMENT AND VERIFICATION

A. Prerequisite EA: Energy Metering Comply with one or more of the following:

1. Install submetering equipment to measure and record energy use within the tenant space.
2. Negotiate a lease whereby energy costs are paid by the tenant and not included in the base rent.

3.2 CONSTRUCTION WASTE MANAGEMENT

A. Credit MR Construction Waste Management: Comply with Division 01 Section "Construction Waste Management and Disposal."

1. Provide calculations of construction debris with % of weight or volume diverted from landfills or incinerators by recycling (sorting on or off-site is acceptable). Also must be separated by material stream with at least 5 different materials.

3.3 CONSTRUCTION INDOOR-AIR-QUALITY MANAGEMENT

A. Credit EQ Comply with Sheet Metal and Air Conditioning National Contractors Associations (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, 2nd Edition 2007, ANSI/SMACNA 008-2008 (Chapter 3).

1. If Owner authorizes use of permanent heating, cooling, and ventilating systems during construction period as specified in Division 01 Section "Temporary Facilities and Controls," install filter media having a MERV 8 according to ASHRAE 52.2 at each return-air inlet for the air-handling system used during construction.
 2. Cover HVAC registers during construction and remove any dust or debris after construction ends and prior to occupancy.
 3. Replace all air filters immediately prior to occupancy.
- B. Credit EQ Contaminant Control: After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out for a period of 48 hours (not required to be consecutively).
1. Provide a memorandum describing the building air flush-out procedures, including the dates when flush-out was begun and completed (min. 48 hrs).
 2. Replace filters after flush-out completion with minimum MERV 10.

END OF SECTION 01 81 12

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Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 02 - EXISTING CONDITIONS

02 41 20 SITE DEMOLITION

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SECTION 02 41 20

SITE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Westchester County Health Care Corporation General Conditions and any Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Related sections include the following:
 - 1. Division 31 Site Clearing
 - 2. Division 31 Site Preparation
 - 3. Division 31 Earthwork

1.02 SUMMARY

- A. This Section includes demolition and removal of the following:
 - 1. Site improvements, utilities, street and walkway lighting, asphalt/concrete pavement, curbing, driveway aprons, sidewalks, signage, and miscellaneous structures.
 - 2. The existing pavements and miscellaneous structures to be demolished and stripped should be removed from within and at least to the limits shown on the design plans.
 - 3. Prior to stripping and demolition operations, all utilities should be identified, marked out in the field, and secured as necessary.

1.03 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
- B. Abandon: Same as remove above. Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or recycled.
- C. Remove and Salvage: Detach items from existing construction and deliver them to the Owner where indicated on the plans.
- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

1.04 QUALITY ASSURANCE

- A. Pre-Demolition Conference: Conduct pre-demolition conference at the Project Site a minimum of 72 hours prior to commencing any demolition work of this Contract. The meeting will be arranged by the Owner representatives upon notification of the Contractor and is to be attended by representatives of the Contractor, Owner, Project Manager.

1.05 PROJECT CONDITIONS

- A. Adjoining on-site building occupants will continue to occupy their facilities immediately adjacent to the Project Site and demolition areas. Thus, the Contractor must conduct his operations in such a manner and make any arrangements necessary so that the building occupants use the facilities will not be disrupted during the course of the work.
 - 1. Provide not less than 72 hours' notice to the Owner of activities that will affect their respective use of their property.
 - 2. Maintain access to existing walkways, exits, and other adjacent occupied or used facilities.
 - a. Do not close or obstruct walkways, exits, or other occupied or used facilities without written permission from authorities having jurisdiction or the affected property owner.
- B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the conduct of the Work.
 - 1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify the Owner representatives.
- C. Storage or sale of removed items or materials on-site is not permitted.

1.06 COORDINATION

- A. Arrange demolition schedule so as not to interfere with Owner's on-site operations.

PART 2 - PRODUCTS

2.01 SOIL MATERIALS

- A. Satisfactory Soils: Comply with requirements in Section 312000 Earthwork of these specifications.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of site demolition work required.
- B. Inventory and record the condition of items to be removed and salvaged.
- C. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Owner's representatives.

3.02 PREPARATION

- A. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities and structures to be demolished.
 - 1. Arrange to shut off indicated utilities with the Owner's representative.
- B. Temporary Shoring: Provide and maintain shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
- C. Removed and Salvaged Items: Comply with the following:
 - 1. Clean salvaged items of dirt and demolition debris.
 - 2. Store items in secure area until delivery to Owner.
 - 3. Transport items to Owner's storage area designated by Owner.
 - 4. Protect items from damage during transport and storage.

3.03 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, building entries, and other building facilities during demolition operations.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by the Engineer, items may be removed to a suitable, protected storage location during demolition and cleaned and reinstalled in their original locations after demolition operations are complete.
- C. Existing Utilities: Maintain utility services indicated to remain and protect them against damage during demolition operations.
 - 1. Do not interrupt existing utilities serving both on-site and off-site adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 - 2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
 - a. Provide at least 72 hours' notice to Owner if shutdown of service is required.
- D. Temporary Protection: Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction and as indicated.
 - 1. Protect existing site improvements, appurtenances, and landscaping to remain.
 - 2. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent structures and facilities to remain.
 - 3. Provide protection to ensure safe passage of people around demolition area and to and from occupied portions of adjacent buildings and structures.
 - 4. Protect walls, structures, and other adjacent exterior construction that are to remain and that are exposed to demolition operations.

3.04 DEMOLITION, GENERAL

- A. General: Demolish all items, as either indicated on the plans or encountered in the field during the course of the work, completely. Use methods required to complete the Work within limitations of governing regulations and as follows:
 - 1. Do not use cutting torches until work area is cleared of flammable materials. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

- B. Site Access and Temporary Controls: Conduct demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
 - 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

3.05 MECHANICAL DEMOLITION

- A. Concrete: Cut concrete full depth at junctures with construction indicated to remain, using power-driven saw, then remove concrete between saw cuts.
- B. Existing Utilities: Remove existing utilities and below-grade utility structures.
 - 1. Fill abandoned utility structures with satisfactory soil materials according to backfill requirements in Section 312000 Earthwork of these specifications.
- C. Site Drainage: Site soils may soften when exposed to water, every effort must be made to maintain drainage of surface water runoff away from construction areas and open excavations by grading and limiting the exposure of excavations and prepared subgrades to rainfall.

3.06 EXPLOSIVE DEMOLITION

- A. Explosives: Use of explosives during the course of the demolition work is not permitted.

3.07 SITE RESTORATION

- A. Below-Grade Areas: Completely fill below-grade areas and voids resulting from demolition operations with satisfactory soil materials according to backfill requirements in Section 312000 Earthwork.
 - 1. Rough grade areas ready for further excavation or new construction.
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.08 REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

- C. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.09 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project Site and legally dispose of them off site.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: On-site burning of rubbish and demolished materials will not be permitted.
- C. Disposal: Transport demolished materials off Owner's property and provide for the legal off-site disposal of the material.

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to condition existing before demolition operations began.

END OF SECTION 02 41 20

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Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 03 - CONCRETE

03 11 00	CONCRETE FORMING
03 15 00	CONCRETE ACCESSORIES
03 20 00	CONCRETE REINFORCEMENT
03 30 00	CAST-IN-PLACE CONCRETE
03 30 53	CAST IN PLACE CONCRETE WALL

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SECTION 03 11 00

CONCRETE FORMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. The General Conditions, any Supplementary General Conditions and Division 1, General Requirements, are hereby made a part of this Section as fully as if repeated herein.

1.2 SECTION INCLUDES

- A. Job-Built Formwork, Prefabricated Forms, Form Ties and Accessories; Design; Construction and removal of forms, including shoring, bracing, cribbing, and screeds.
 - 1. Embedded Items: Provide accurate setting and placing of items built into the concrete to provide openings, recesses, attachment, or anchorage. Certain products are to be furnished as a part of this Contract and are specified in other sections.
 - 2. Formwork Design: Contractor shall hire a registered professional engineer who shall be responsible for the design of all temporary formwork including stripping procedures for concrete flat slabs, walls, columns, etc.

1.3 RELATED WORK

- A. Sections of DIVISION 3, CONCRETE, as well as all other sections involving interface with concrete work.

1.4 QUALITY ASSURANCE

- A. References: Comply with the following minimum standards:
 - 1. ACI-347R (ANSI A 145.1) Recommended Practice for Concrete Formwork.
 - 2. ACI-318 (ANSI A 89.1) Building Code Requirements for Reinforced Concrete
 - 3. ACI-301 (ANSI A 138.1) Specification for Structural Concrete for Buildings.
 - 4. ACI-117 Standard Specifications for Tolerances for Concrete Construction and Materials.
 - 5. ASTM E-1155 Standard Method for Determining Floor Flatness & Levelness Using the F-Number System.
 - 6. ACI 302.1 Guide for Concrete Floor and Slab Construction.

1.5 QUALITY CONTROL SUBMITTALS

- A. Certification: Form release materials will not discolor concrete and without removal from concrete are compatible with materials to be used for setting materials, adhesives, applied finishes, and coatings.

1.6 JOB CONDITIONS

- A. Design Loads: Do not place, handle or store products, equipment or other materials on structure, before concrete has reached its design strength and in such a manner as to not exceed design loads. Check with Structural Engineer for design loads of each area and review of construction loads. Any area damaged by construction operations must be repaired or replaced at no costs.

1.7 ACTION SUBMITTALS

- A. Formwork Shop Drawings: Submit shop drawings for fabrication and erection of specific finished concrete surfaces as indicated. Show general construction of forms including jointing, special form joint or reveals, location and pattern of form tie placement, and other items, which affect exposed concrete visually.
 - 1. Architect's review is for general architectural applications and features only. Design of formwork for structural stability and efficiency is Contractor's responsibility.
 - 2. Contractor shall submit shop drawings for all temporary formwork including stripping procedures for concrete flat slabs, sheeting, shoring, reshoring, underpinning, etc., sealed by a registered professional engineer in the State of New York as part of the contractor's work.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

- A. Lumber: Western Wood Products or Southern Forest Products grading. Common or Utility grades for non-exposed surfaces. Structural or Construction grades for walers, braces and supports.
- B. Plywood: US Product Standard PA-1 "B-B (Concrete Form) Plywood" Class I, exterior grade or better, milled oiled and edge sealed, with each piece bearing legible inspection trademark.
 - 1. All form materials for exposed slabs, columns and spandrels shall be plastic coated or medium density.

2.2 FORM LINERS

- A. Form Liners: Units of face design, texture, arrangement, and configuration indicated. Furnish with manufacturer's recommended liquid-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent surfaces treatments of concrete.

2.2 ACCESSORIES: Furnish hairpin clips, bands, clamps, braces, adjustable shoring jacks, fasteners, form ties, etc., necessary to execute installation of formwork. No aluminum devices or fasteners (including nails) will be permitted.

- A. Form Ties: Non-corrosive, non-staining; minimum working strength as required by concrete sections being contained when full liquid concrete and construction loads; adjustable in length to permit complete tightening of forms and of such types as to leave no metal closer than 1-1/2" the surface, spacing as required to maintain formwork and finish concrete within tolerances and at a uniform spacing approved by the Architect, generally 24 inches on center.
- B. Form Release: Non-staining liquid which will impart a waterproof film to prevent adhesion of concrete and will not stain, cause imperfections, or leave a paint-impeding coating on the face of the concrete. When finished surface is to be painted or to receive other surface treatment, the material applied to form surfaces shall be compatible with the type of paint or surface treatment to be used.

PART 3 - EXECUTION

3.1 DESIGN: Formwork and its supports shall carry adequately all liquid concrete, men, and equipment, in absolute safety under loads imposed during construction.

- A. Design and Placement of Forms: ACI 347, and ACI 318,

- B. Tolerances: ACI-347 and ACI 117 will be considered absolute maximum, unless otherwise indicated.
- 3.2 CONSTRUCTION: Construct forms to slopes, lines and dimensions shown, plumb and straight and sufficiently tight to prevent leakage; securely brace and shore forms to prevent displacement and to safely support construction loads. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages, inserts and other features required in work.
- A. Forms for exposed finish concrete shall be furnished in the largest practicable sizes to minimize the number of joints and to conform to the joint system shown on the drawings.
- B. Forms for textured finish concrete shall be units of face design, size, arrangement and configuration as shown on the contract drawings or as required to match the Architect's control sample. Provide solid backing and form supports to ensure stability of textured form liners.
- C. Cylindrical columns and supports shall be constructed of metal, fiberglass reinforced plastic, or round section members with paper or fiber tubes, constructed of laminated plies using water-resistant adhesive with wax-impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist loads imposed by wet concrete without deformation.
- 3.3 BUILT-IN EMBEDDED ITEMS: Provide for installation of fastening devices required for attachment of other work. Properly locate in cooperation with other trades; secure and maintain in position before concrete is poured.
- A. Coordination: Ascertain requirements and extent, location and details of items to be embedded or built into concrete. Templates or setting diagrams shall be furnished by the various trades or manufacturers when items are to be set, embedded or blocked -out by this trade. Ensure that anchors reach adequate penetration and engage with reinforcement. Temporary support shall not be evident when forms are removed.
- B. Work by Others: Allow sufficient time between erection of forms and placing of concrete for various trades to properly set embedded items required for their work. Maintain in position and protect all (provided and placed in the forms by the various trades) until concrete is completed.
1. Conduits cannot be run in concrete framed slabs, beams, columns, and walls.
 2. Conduits can be run in the concrete slab on grade only when indicated. Do not space conduit or pipes closer than three diameters on center; they must be so placed as to avoid changing the location of the reinforcement from that shown on the drawings.
- C. Anchorages: Items required to be set as a part of this work generally include: Inserts, sleeves, hangers, ties, anchors, bolts, base & leveling plates, frames, angle guards, dowels, anchor slots, reglets, nailing strips, blocking, grounds, sleepers, and adjustable wedge inserts. Refer to Miscellaneous Metals and Masonry Sections for certain products.
1. Accurately locate utilizing a level or transit. Set in position with proper penetration, exposure and engagement with reinforcement. Maintain in position by double bolting to formwork or wood templates.
 2. Plates, Frames, Sleeves, Blocking and Miscellaneous Metals: Set item with perimeter flush with concrete surface. Ensure adequate bonding, anchorage and protection of dissimilar materials. Items shall have a thickness of not less than 1/8" (i.e. no cans, cups, etc.) Prevent leakage and infiltration of mortar into openings.

- 3.4 LINES AND LEVELS: Check the lines and levels of the completed formwork for all exposed columns, grade beams, walls, etc., before concrete is placed. Make whatever corrections or adjustments to the formwork to correct any deviations which exceed specified tolerances allowed.
- A. Adjust height of formwork at construction joint locations in post-tensioned slabs after post-tensioning and prior to pouring of adjacent slabs to compensate for rise in slab due to prestress force.
- 3.5 CLEANING FORMWORK: Force debris to and out of clean-out panels with a jet stream of compressed air. Clean-out all debris. Hose form thoroughly with water and air-jet out any standing water when weather permits.
- A. If concrete placing does not commence immediately after cleaning, cover openings in forms with tarpaulins.
- 3.6 FORM REMOVAL: Remove forms in accordance with ACI 301, ACI 318 and ACI 347. Removal strength of concrete for stripping shall be determined in accordance with ACI 301, paragraph 4.7.
- A. Appearance: No steel spreaders, ties, or other metal, shall project from or be visible on any concrete surface.
- B. Shoring: Leave shoring in place until concrete member will safely support its own weight, plus any loads that may be placed upon it. Any reshoring done must meet the requirements of ACI 347; without producing excessive stress, excessive deflection or permanent deformation of the floor.
- C. All concrete slabs and beams shall have one (1) full level of shores under "wet" concrete plus two (2) additional levels of back shores until wet concrete has been stressed.

END OF SECTION 03 1100

SECTION 03 15 00

CONCRETE ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Construction joints, expansion joints and control joints.
- B. Vapor retarders under all interior concrete slabs on grade.

1.3 RELATED WORK

- A. Section 03 11 00 Concrete Formwork.
- B. Section 03 30 00 Cast-In-Place Concrete.

1.4 REFERENCES

- A. ASTM - American Society for Testing and Materials
- B. ASTM A 924 – Specification for General Requirements for Steel Sheet Metallic Coated by the Hot Dip Process
- C. ASTM C 578 - Specification for Preformed, Cellular Polystyrene Thermal Insulation
- D. ASTM E 1745 - Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
- E. ASTM E 1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

1.5 ACTION SUBMITTALS

- A. Manufacturers' Literature: Indicate compliance with product specifications.
- B. LEED Submittal: Comply with Section 01 81 13
 - 1. MR Credit: BPDO – Material Ingredients
 - a. For joint sealants and vapor barrier, if available: Material Ingredient Report.
 - 2. EQ Credit: Low-Emitting Materials
 - a. For interior wet-applied coatings: Documentation indicating compliance with California Department of Public Health (CDPH) Standard Method v1.1 and printed statement of VOC content in g/L.
- C. Samples: Each type product with accessories, if requested.
- D. Shop Drawings: Indicate proposed locations of all construction joints and pouring sequence.

1.6 INFORMATIONAL SUBMITTALS

- A. Manufacturer's standard labor and material warranty for all joint sealant and extensible epoxy material which states that the product will be free of all defects (including workmanship) for a period of 5 years from the completion of the project. This includes all future labor and material deemed necessary to repair the sealant and epoxy if any future cracks or leaks occur.

PART 2 - PRODUCTS

2.1 EXPANSION JOINT FILLERS

- A. Expanded Polystyrene: Closed-cell, extruded polystyrene with high density skin.
 - 1. ASTM D-3575
 - 2. Density = 2.0 pcf
 - 3. Compressive Set (25%) = 40 psi.
 - 4. Water Absorption = 1% maximum
 - 5. Manufacturers:
 - a. "Deck-O-Foam" by W.R.Meadows
 - b. "Foamtastic" by Hohmann & Barnard
- B. Highload Insulation: Extruded polystyrene foam insulation that resists compressive creep and fatigue.
 - 1. ASTM C578, Type V.
 - 2. Compressive strength (@ 5% deformation) = 100 psi
 - 3. Manufacturer – 'Styrofoam Highload 100' by Dow Building Solutions.

2.2 CONTROL JOINTS

- A. Metal Load Transferring type 24 gauge galvanized steel, (ASTM A-924), shaped to form a continuous tongue and groove load transferring key between concrete slabs, punched for doweling including stakes, splice plates and removable 1/8" plastic cap.
 - 1. Manufacturers:
 - a. Dayton Superior – Screed Key
 - b. Cardinal Mfg. Co. – Form-A-Key
 - c. Vulcan, Inc. – Vulcan Keyed Joint System
 - 2. Locations: All interior concrete slabs on grade.
- B. Interior wet-applied coatings: Comply with low-emitting requirements in Division 01 Section "Sustainable Design Requirements - LEED."
- C. Joint formed with 2 x 6 lumber and containing smooth steel dowels.
 - 1. Locations: All interior concrete slabs on grade and concrete walls.
- D. Sawcut control joints made with a wet saw.
 - 1. Locations: All interior concrete slabs on grade.
- E. Preformed removable inserts.
 - 1. Locations: All interior concrete slabs on grade.

F. Chamfer Strips:

1. Locations: All concrete walls.

2.3 DOVETAIL ANCHOR SLOTS

- A. Continuous vertical "V" shaped, 16 gauge hot dipped galvanized concrete insert for attachment of masonry veneer. Space inserts at 24" on center horizontally wherever masonry veneer exists at concrete walls.

1. Manufacturers:
 - a. Hohmann & Barnard, Inc – Anchor # 305
 - b. Or approved equal.

- B. Masonry tie shall be 1" wide by 16 gauge hot dipped galvanized corrugated tie with a dovetail end, spaced at 16" on center vertically wherever masonry veneer exists at concrete walls. Embed ties a minimum of 2.5" into the masonry.

1. Manufacturers:
 - a. Hohmann & Barnard, Inc – Anchor # 303
 - b. Or approved equal.

2.4 WATERSTOPS

- A. Waterstops for horizontal concrete joints shall be a flexible coiled strip of butyl rubber and swellable clay waterproofing joint compound that swells with water contact to form a long lasting compression seal, and shall conform to the Swellstop Waterstop manufactured by Greenstreak or approved equal.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Carlisle Coatins & Waterproofing, Inc.; MiraSTOP
 - b. CETCO; Volclay Waterstop-RX
 - c. Greenstreak: Swellstop.
 - d. Henry Company, Sealants Division: Hydro-Flex.
2. Locations: All horizontal joints in below grade walls enclosing habitable areas.

- B. Waterstops for vertical concrete joints shall be made of plasticized polyvinyl material and shall conform to the Labyrinth Waterstop, type 790 (3 ribs) manufactured by Greenstreak or approved equal.

1. Locations: All vertical joints in below grade walls enclosing habitable areas.

- C. Waterstops for vertical concrete joints subjected to expansion and shear movement shall be made of plasticized polyvinyl material and shall conform to the Dumbell with Center Bulb Waterstop, type 754 manufactured by Greenstreak, or approved equal.

1. Locations: All vertical joints subjected to exposed and shear movement in below grade walls enclosing habitable areas.

2.5 VAPOR RETARDER

- A. Vapor barrier shall have all of the following qualities:

1. Maintain permeance of less than 0.01 Perms [grains/(ft² · hr · inHg)] as tested in accordance with mandatory conditioning tests per ASTM E1745 Section 7.1 (7.1.1-7.1.5).
2. Other performance criteria:
 - a. Strength: ASTM E1745 Class A.
 - b. Thickness: 15 mils minimum
3. Provide third party documentation that all testing was performed on a single production roll per ASTM E1745 Section 8.1.

PART 3 - EXECUTION

3.1 JOINT ARRANGEMENTS

- A. Location Criteria: Locate as to least impair the strength of the structure, and at locations coincident with designed structural and architectural features (specifically column lines). Maximum horizontal dimensions of a single unit of placement, 40 feet in a straight line (except footings).
 1. Locations: All locations are subject to approval.
- B. Joint Design: Follow a plane perpendicular to the principal reinforcement with a bulkhead shaped to produce a keyed surface except of expansion joints.
- C. Pouring Sequence: Continuous pouring between joints; however, do not place concrete in adjacent sections until 48 hours have elapsed from placement of original sections.

3.2 CONSTRUCTION JOINTS

- A. One edge of all construction joints shall have a 1/4" wide by 3/8" deep minimum blockout for the installation of the joint filler. Particular care shall be exercised to keep the surface of concrete in exactly the same plane on both sides of the joint.
- B. Framed Concrete Slab Surfaces: Roughen joint surfaces with a chipping hammer or by another approved method which will remove laitance, loose particles or aggregate, or damage concrete. After the surface of the joint has been cleaned of dust, chips, or other foreign material, an approved bonding agent (as specified in Section 03300) shall be placed on the joint surface prior to placing the next lift of concrete.
- C. Slab on Grade Construction Joints: Establish longitudinal and transverse control joints. With elevations checked by instrument stretch line over entire length. Drive stakes 2 ft. o.c. and attached screed to stakes. Provide lateral support where used as a bulkhead. Install smooth dowels and locate joints as specified in the contract documents.
 1. Locations: As indicated on the drawings, or if not shown, locate joints at 40'-0" o.c. maximum spacing for all concrete slabs on grade.
- D. Wall Construction Joints: Attach tongue and groove formed bulkhead to formwork. Accurately place all required doweling and waterstops.
 1. Locations: As indicated on drawings, or if not shown, locate joints at 40'-0" o.c. maximum spacing for all concrete walls.
- E. Doweling and Keying: All formed construction joints shall be doweled. Provide keys, dowels or other details at construction joints as indicated.

3.3 EXPANSION JOINTS

- A. Exposed slabs on grade: Place joint filler 1/2 inch below the finished surface of the slab and extend to the bottom of the slab. The joint between the top of the filler and the finished slab shall be filled with a joint sealer.
 - 1. Locations: Where indicated. If not shown, divide exterior slabs into areas not exceeding 400 sq. ft. and exterior sidewalks into areas not exceeding 150 sq. ft.
 - 2. Type and Size: Use 1/2" thick expansion joint filler or other thickness indicated for full width and depth of concrete section.
- B. Exposed Walls: Place joint filler about 1/2" below the finished surface of the wall and extend to the back of the wall.
 - 1. Locations: Where indicated.
 - 2. Type and Size: Use 1/2" thick expansion joint filler or other thickness indicated for full width of concrete section.

3.4 CONTROL JOINTS

- A. Concrete Slabs and Walls: Install control joints in slabs on grade, walls and sidewalks as indicated on the drawings, or if not shown, locate joints at 20'-0" o.c. maximum spacing for slabs on grade and concrete walls and at 5'-0" o.c. for exterior sidewalks.
- B. Type and Size: Concrete slabs shall have 1/8" wide sawcut joints or preformed removable inserts. Both joints must be installed 1/4 of the slab depth below the top surface within 8 hours of pouring slab. Concrete walls shall have 1 inch deep minimum chamfer strips installed on the inside and outside of the wall.

3.5 WATERSTOPS

- A. Installation of Horizontal Waterstop:
 - 1. Brush keyway clean of all dust and foreign particles just prior to one brush coat of Synko-Flex Primer.
 - 2. Position all strips of Swellstop in the keyway lapping one inch end to end.
 - 3. Just prior to pouring concrete, strip off the protective paper covering.
- B. Installation of Vertical Waterstop:
 - 1. Hold waterstop flat against the surface which will form the joint to avoid any distortion and nail to form with double headed nails at 12" on center maximum, driving the lower head of the nail hard against the nailing flange.
 - 2. The Cellular waterstop must be installed with one inch (dressed) wood nailing strips or "Dutchmen". Preformed expansion joint material can be used in conjunction with the Cellular waterstop, if an expansion joint is required.
 - 3. When the concrete is poured it is important to thoroughly vibrate or puddle the concrete around the waterstop, because the success of the installation depends on complete filling of the grooves-the finished joint should have concrete in contact with all waterstop surfaces.
 - 4. Splices: Do not lap waterstop. All joints shall be spliced using a heat sealing fusion method.
 - 5. Cleaning: Clean waterstop prior to pour to insure that foreign matter does not interfere with direct contact between waterstops and concrete. Sweep all horizontal joints clean of debris.

3.6 INSTALLATION OF FILM TYPE VAPOR RETARDERS FOR CONCRETE SLABS

- A. Ensure subbase for concrete is compacted; sharp objects and scraps are removed.
- B. Place vapor barrier in widest practical widths with all joints lapped minimum 6 inches. Seal vapor barrier overlap together with Raven Vapor Bond Tape.
- C. Positioning: Maintain in place. Stretch and weight edges and laps to maintain their position until concrete is placed.
- D. Protection and Patching: Protect vapor barrier from rips. Hold patches in readiness during the concrete pouring operation and lay over all rips (beneath wire fabric and reinforcing steel.)
- E. Penetration: (Pipe, anchors, and other items) Seal vapor barrier material to the pipe and other penetrations with an elastomeric sealant that is approved by the vapor barrier manufacturer and architect.

END OF SECTION 03 1500

SECTION 03 20 00

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Steel reinforcing bars, ties, dowels and welded wire fabric, miscellaneous reinforcement and accessories.

1.3 RELATED WORK

- A. Sections of DIVISION 3, CONCRETE, as well as all other sections including interface with concrete work.

1.4 QUALITY ASSURANCE

- A. References: Conform to and perform work in accordance with the current editions of:
 - 1. Local and State Building Codes.
 - 2. "Building Code Requirements for Reinforced Concrete", ACI 318.
 - 3. "Manual of Standard Practice for Detailing Reinforced Concrete Structures", ACI 315, and CRSI 63 and CRSI 65.
 - 4. Specifications for Structural Concrete Buildings ACI 301.
 - 5. ANSI/AWS D1.4 Welding Code.
 - 6. "Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcement", ASTM A-884.
 - 7. "Standard Specification for Epoxy-Coated Reinforcing Steel Bars", ASTM A-775.
 - 8. "Specifying, Proportioning, Mixing, Placing, and Finishing Steel Fiber-Reinforced Concrete", ASTM 544.3R
 - 9. "Steel Fiber for Fiber Reinforced Concrete", ASTM A 820.
 - 10. "Fiber-Reinforced Concrete and Shotcrete", ASTM C1116.
 - 11. "Specification for Stainless Steel Reinforcing Bars", ASTM A-955
 - 12. "Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete", ASTM A1064
- B. Manufacturing Source: Reinforcing Steel of domestic origin.
- C. Fabricator: Maintain a competent engineering department and adequate equipment to fabricate steel in accordance with CRSI Manual of Standard Practice, latest edition.

1.5 SUBMITTALS

- A. Shop Drawings: Show plan layouts (including dimensioned slab openings), elevation drawings, bending, splicing, sizes, spacing and details of all reinforcing and accessories. **Please note that the Contract Documents in CAD format will not be made available to the contractor for their use in the preparation of the shop drawings, unless a release is signed, and a fee is paid for each cad file requested.**

- B. LEED Submittals: Comply with Section 01 81 13
 - 1. MR Credit: BPDO – Environmental Product Declarations
 - a. For steel reinforcement: Industry-wide or product-specific EPD.
 - 2. MR Credit: BPDO – Sourcing of Raw Materials
 - a. For steel having recycled content: Documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include material cost value.
 - b. For steel having regionally sourced material: Documentation indicating location of extraction, manufacture, purchase of primary raw materials .
- C. Reports and Results: From inspection and testing as soon as determination is made.
- D. Epoxy coating used for coating exposed reinforcing bars.

1.6 PRODUCT HANDLING

- A. Packing: Reinforcement must be tagged as required to indicate respective mill test and job condition.
- B. Shipping: Epoxy coated bars shall be bundled together for shipment using excelsior or equivalent, and plastic or padded metal bands. All personnel responsible for loading or unloading coated bars shall use caution to avoid dragging or dropping the bundles. If, during shipment, any damage results, the damaged product shall be repaired as directed by the Engineer.
- C. Storage and Handling: Protect products in such a manner as to prevent damage, bending, or undue rusting.
 - 1. Reinforcing Steel: Store at site to permit easy access for proper inspection and identification of each shipment. Separate material of each shipment for size and shape.
 - 2. Epoxy Coated Reinforcing Steel: Bundles shall be stored at the site on suitable blocking or platforms at least 5 inches above the ground or vegetation. They shall be kept free from accumulations of dirt, oil or other foreign material. Blocking shall be sufficiently close to avoid bending and distortion of the bars. Any damage to coating or distortion of the bars as a result of improper storage procedures shall be corrected to the satisfaction of the Engineer at the expense of the Contractor.

PART 2 - PRODUCTS

2.0 LEED v4 Submittals

- A. Recycled Content: Provide steel with minimum 90 percent total recycled content, including at least 60 percent post-consumer recycled content.

2.1 REINFORCING: Manufacture and deform in accordance with ANSI/ASTM A-615, except all reinforcing to be welded shall conform to ASTM A-706. All rebar shall consist of domestic manufacture billet steel of clean, new stock.

- A. All column vertical bars (except dowels): Use grade 75 (yield) minimum 75000 psi.
- B. All other Bars: Use Grade 60 (yield) min. 60,000 psi.

2.2 STAINLESS STEEL REINFORCING STEEL: Non-magnetic deformed bars conforming to ASTM

A955, Grade 60, annealed. Supplemental requirement S2 prescribing magnetic permeability testing shall apply to this reinforcing steel.

A. Location: Slab reinforcing @ MRI

2.3 WELDED WIRE FABRIC: Manufacture in accordance with ANSI/ASTM A1064.

A. Unless otherwise specified in the contract documents, provide 6"x 6"-W.2.9 / W2.9 W.W.F., Grade 65 (yield) min. 65,000 psi.

2.4 FASTENERS AND SPLICE

A. Tie Wire: Double annealed steel wire, minimum #16 gauge, conforming to ANSI/ASTM A497.

B. Tie wire for epoxy-coated reinforcing bars shall be nylon-, epoxy-, or plastic coated tie wire.

2.9 ACCESSORIES: Provide all spacers, chairs, bolsters, ties and other devices necessary to properly place, space, support, and maintain reinforcement in locations. Provide in accordance with ACI-315. No aluminum inserts or accessories will be permitted.

A. Bar Supports: Conform to "Bar Support Specifications", CRSI Manual of Standard Practice, Chapter 3.

1. Support reinforcing in footings with precast concrete blocks.
2. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class 1) or stainless steel protected (CRSI, Class 2).
3. Support reinforcement for slabs on grade with precast concrete blocks, or No. 5 rebar placed on metal chairs with plate bases as required to prevent penetration of earth or vapor barrier. Spacing of blocks, chairs, and No. 5 rebar shall be as necessary to prevent sagging of the reinforcement under the weight of construction workers and wet concrete.
4. Support reinforcement for framed slabs (including slabs poured on metal deck) with No. 5 rebar placed on slab bolsters or chairs spaced as necessary to prevent sagging of the reinforcement under the weight of construction workers and wet concrete.

2.5 FABRICATION: Shop fabrication according to approved shop drawings. All fabrication of bars performed in a shop, with field fabrication done only where unavoidable, and approved.

A. Reference: Fabricate in accordance with CRSI Manual of Standard Practice for Reinforced Concrete Construction.

PART 3 - EXECUTION

3.1 INTENT: All concrete shall be reinforced. For conditions not specifically shown or detailed, framing and reinforcement shall be provided in a manner consistent with other similar details or conditions shown on the drawings. Prior to work under these conditions, notify the Architect for confirmation.

3.2 PREPARATION

A. Clean bars of loose mill scale, rust, oil, and all coatings that will destroy or reduce the bond before placing, and again before concrete is placed.

B. Examine the drawings and specifications for all other Sections of Work, especially the mechanical

and electrical work.

- 3.3 **PLACEMENT OF REINFORCEMENT:** Accurately place in positions and spacings shown. Securely support and fasten to prevent displacement before or during concrete placement. Place reinforcing steel, bar supports, and splice devices, in accordance with CRSI Manual of Standard Practice, ACI 315 and ACI 318.
- A. **Support:** Use approved accessories to hold reinforcement at proper distances from surrounding surfaces, with minimum coverage as indicated. Tying reinforcing steel with wire to nails in forms or using wood spacers is not permitted.
 - B. **Spacing:** In no case shall the clear distance between bars be less than 1 inch, nor less than 1-1/2 times the maximum size of coarse aggregate in the concrete, unless specifically indicated as bundled.
 - 1. **Concrete Coverage and Protection:** ACI-318.2.
 - 2. **Clearance:** The clear distance between bars also shall apply to the clear distance between contact splices and adjacent splices or bars.
 - C. **Layering:** Where reinforcement in beams or girders is placed in two or more layers, the clear distance between layers shall not be less than 1 inch, and the bars in the upper layers shall be placed directly above those in the bottom layer.
 - D. **Field Adjustments:** Move concrete reinforcing steel as necessary to avoid interference with other reinforcing steel, other embedded items; however, prior to placing concrete, bars moved more than tolerances herein shall be inspected and approved.
 - 1. **Sleeves and Embedded Items:** Do not cut bars to clear sleeves or slots through slabs or walls. Wrap bars around these openings.
 - 2. **Openings:** Bar reinforcement terminated at openings in slabs and walls shall be compensated for by placing one half of reinforcement terminated on each side of openings for the full span length.
 - E. **Install welded wire fabric** in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.
 - F. **Minimum Rebar and Dowel Extent:** Provide minimum temperature reinforcing in all walls and slabs where no reinforcing is shown or noted.
 - G. **Minimum Placement:** All reinforcing steel must be in place, wired, and inspected, before depositing concrete.
 - H. **Protection:** Protection care must be exercised in placing reinforcing steel to prevent any marring of interior faces of forms, shifting of forms, or damaging epoxy coating on reinforcing.
 - I. **Provide protection** for all vertical reinforcing bars that are not immediately enclosed by formwork.
- 3.4 **FASTENING INTERSECTIONS:** Wire tie reinforcement together at all points where bars cross. Splice as indicated. Welding or tack welding of reinforcement bars to other bars or to plates, angles, etc. is prohibited. Work shall be performed in accordance with CRSI Recommendations.
- 3.5 **LAP SPLICES:** Lap bars as scheduled on drawings and securely tie with wire at frequent intervals. Stagger so that adjacent splices will be apart with care taken to maintain proper clearance, between parallel bars and between bars and forms. Make lap splices in a manner to

provide laps consistent with structural drawings, and CRSI.

- A. Tie Wires: Cut loose ends and turn wire twists inside of the section and bend so that placement of concrete will not force ends to exposed concrete surfaces.
- B. All lap splices for epoxy coated reinforcing steel shall be increased as required by ACI 318 Building Code.

3.6 DOWELS: Install with a template to hold bars in the proper position, placed as located on the drawings.

- A. Size: Dowels shall be of the diameter size indicated in various sections with lengths equivalent to twice that required for the indicated spliced. One-half of the length shall be embedded with the required splice length exposed for attachment.

3.7 INSPECTION

- A. Comply with inspection requirements of Sections 01 4000, Quality Control, 03 3000 Cast in Place Concrete, and Division 4 Masonry.
- B. Inspect concrete and masonry reinforcement as indicated in ACI 301; IBC and ACI 311 "Recommended Practice for Concrete Inspection."
- C. Inspect reinforcing size, quantity, strength, position (location), and arrangement. Concrete and masonry reinforcement includes welded wire fabric, mild reinforcing bars, and fibrous types. Inspection shall include but is not limited to the following.
 - 1. Insure rebar and welded wire fabric is not displaced during placement of concrete and masonry grout.
 - 2. Rebar size, quantity, strength, position (location) and arrangement in columns, beams, slabs, footings, walls, masonry, precast concrete plank grout keys, etc.
 - 3. Fibermesh slab reinforcing in concrete slabs.
 - 4. Evaluation of cross sectional area of reinforcing steel and placement of supplemental bars.
 - 5. Epoxy-coating of existing reinforcing steel.
- D. Submit daily reports indicating conformance and exceptions of concrete operation to contract documents.
- E. See specification Section 03 3000 for further requirements.

3.9 CONTRACTOR'S RESPONSIBILITY

- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project, and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 03 2000

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SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Condition and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Cast-in-place concrete including preparation, conveying, placement, leveling, finishing, hardening, sealing, curing, bonding, jointing, cutting, patching and grouting.
- B. Specific elements include foundations, walls, slabs, columns, stairs, etc.

1.3 ADD ALTERNATE: Contractor shall provide an add alternate price to install a corrosion inhibitor liquid additive as required by paragraphs 2.5H and 2.18.B.2.

1.4 RELATED WORK

- A. Sections of Division 3, Concrete, as well as all other sections involving interface with concrete work.

1.5 QUALITY ASSURANCE

- A. Manufacturer's Representation: Arrange with the manufacturer to provide a representative to assist and instruct the trades in the proper application of his product. The manufacturer's representative shall be available to visit the site if it becomes necessary for this purpose, and certification of application.

1.6 REFERENCES

- A. American Concrete Institute (ACI): The following constitute part of this specification (latest edition). Reference to Portland Cement shall mean type and color specified.
 - 1. 318 (ANSI A89.1) - Building Code Requirement for Reinforced Concrete.
 - 2. 306 (ANSI A144.1) - Recommended Practice for Cold Weather Concreting.
 - 3. 305 - Recommended Practice for Hot Weather Concreting.
 - 4. 211.1 (ANSI A167.1) - Recommended Practice for Selecting Proportions/Normal Weight Concrete.
 - 5. 304 (ANSI A186.1) - Recommended Practice for Measuring, Mixing and Placing Concrete
 - 6. 301 (ANSI A138.1) - Specification for Structural Concrete for Buildings.
 - 7. 311 (ANSI A188.2) - Recommended Practice for Concrete Inspection.
 - 8. 302.1 Guide for Concrete Floor and Slab Construction.
 - 9. 117 Standard Specifications for Tolerances for Concrete Construction and Materials.
 - 10. 310R – Guide to Decorative Concrete
- B. American Society of Testing and Materials (ASTM):
 - 1. C-150 - Portland Cement
 - 2. C-309 - Liquid Membrane - Forming Compounds for Curing Concrete

3. C-979 - Specifications for Pigments for Integrally Colored Concrete.
4. E-1155 Standard Method for Determining Floor Flatness & Levelness Using the F-Number System.

1.7 ACTION SUBMITTALS

- A. Mix Designs: All classes of concrete include aggregate gradation and actual proportioning.
- B. Manufacturer's Literature: Each material and accessory include manufacturer's directions and product specifications with recommended unit quantities.
- C. LEED v4 Submittals: Comply with Section 01 81 13
 1. MR Credit: BPDO – Environmental Product Declarations
 - a. For cement, slag / fly ash: Industry-wide or product-specific EPD.
 2. MR Credit: BPDO – Sourcing of Raw Materials
 - a. For concrete mix having recycled content (slag and fly ash): Documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include material cost value.
 - b. For concrete having regionally sourced material (slag and fly ash): Documentation indicating location of extraction, manufacture, purchase of primary raw materials.
 3. MR Credit: BPDO – Material Ingredients
 - a. For admixtures and coatings, if available: Material Ingredient Report
 4. EQ Credit: Low-Emitting Materials
 - a. For interior wet-applied concrete curing compound and coatings: Documentation indicating compliance with California Department of Public Health (CDPH) Standard Method v1.1 and printed statement of VOC content in g/L.

1.8 INFORMATIONAL SUBMITTALS

- A. Certification:
 1. Compliance: Notarized statement issued by manufacturers of the respective products that the supplied products meet requirements and are tested in accordance with standards specified.
 2. Compatibility: Certify that curing compounds, sealers and form release agents will not discolor concrete and without removal from concrete will not be harmful to later application of setting materials.
 3. Installation: Certify that the materials have been installed/applied in accordance with the manufacturer's instructions.
- B. Delivery Tickets: Duplicate tickets with each load; stating:
 1. Producer's Name; Delivery Date; Time Dispatched; Time Delivered; Truck Number; Number of Cubic Yards; Type and Brand of Cement; Amount of Admixture; Class of Concrete or Cement Content (Bags/Cubic Yards); Amount of Water Added at Job.
- C. Qualifications of inspection agency including past experience of field personnel to perform required inspection.
- D. Testing and Inspection Reports:
 1. Results of compression cylinders and grout cubes.
 2. Test Reports: Indicating strength and density of furnished product.

3. Inspection reports: Certifying rebar, fibermesh and weld wire fabric placement, post-tensioned tendon placement and results of jacking operation, etc. (See Section 3.16 – Testing and Inspection).

- E. Silane Sealer Warranty - Manufacturer's standard labor and material warranty for the silane sealer compound which states that the product will be free of all defects (including workmanship) for a period of 5 years from the completion of the project. This includes all future labor and material deemed necessary to re-install the sealer if any areas of excessive wear due to normal occupancy occurs.

1.9 PRODUCT HANDLING

- A. Storage: Store cements in dry, well ventilated enclosures.
- B. Do not use cement showing indication of moisture damage, caking and other deterioration.

1.10 ENVIRONMENTAL CONDITIONS

- A. Excess Moisture: Place no concrete during periods of rain, sleet or snow, unless adequate and approved protection is provided; allow no rain or other weather produced moisture to increase mixing water or to damage finished surfaces.
- B. Cold Weather Concrete: ACI-306.
 1. Admixtures: Do not use salt, chemicals or other foreign materials mixed with the concrete for the purpose of preventing freezing.
 2. Ground freezing: Cover concrete slabs on earth, footings and walls, as required to protect the ground underneath from freezing.
 3. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures by using insulating blankets or other approved method.
 4. When air temperature has fallen to or is expected to fall below 40 degrees Fahrenheit uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees Fahrenheit and not more than 80 degrees Fahrenheit at point of placement.
- C. Hot Weather Concrete: ACI-305. Prevent accelerated set from heat and winds. Maintain moist as required.
 1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C-94 may be required.
 2. When air temperature is between 85 degrees Fahrenheit and 90 degrees Fahrenheit, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 degrees Fahrenheit, reduce mixing and delivery time to 60 minutes.
 3. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees Fahrenheit for normal strength concrete and below 75 degrees for high strength concrete (fc' greater than 6000 psi). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
 4. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 5. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.

- D. Thermal Change: Protect all concrete from rapid drying due to wind, overheating due to the direct sun, freezing or thermal shock, to assure consistent curing for all concrete. Covering, reflective covering, shading, heating, insulating, cooling, wetting are measures which should be considered in maintaining minimal moisture loss at a relatively constant temperature during curing.

1.11 JOB CONDITIONS

- A. Design Loads: Do not place, handle or store products, equipment, or other materials on structure, before concrete has reached its design strength and in such a manner as to not exceed design loads. Check with Structural Engineer for design loads of each area and review of construction loading and proposed distribution of construction loads. Any area damaged by construction operation must be repaired or replaced at no cost to the Owner.
- B. Construction Damage: Do not permit walking or wheeling on fresh concrete until it has set for a sufficient length of time. Protect all concrete which will be permanently exposed in finished work from damage from construction operations specifically falling tools, mortar or other objects.
- C. On the framed floors, the steel beams and metal deck have been designed to deflect under the weight of the wet concrete. The contractor shall provide additional concrete fill as necessary to produce a level floor.

PART 2 – PRODUCTS

2.0 LEED v4 REQUIREMENTS

- A. LEED v4 Requirement for Regional Materials: Provide concrete products and materials manufactured at facilities situated within 100 miles of the Project site from raw materials that have been extracted, harvested, or recovered, as well as manufactured, within 100 miles of the Project site.
- B. Contractor shall track and weigh all materials in order to ensure that the LEED v4 Credits. Credits for use of regional materials have been achieved and to assure LEED v4 certification points for all concrete construction.

2.1 CEMENT

- A. Portland Cement: ASTM C-150, Type I (unless otherwise approved by the Structural Engineer). Use one brand of cement throughout project unless otherwise acceptable to the Architect.
- B. Fly Ash: ASTM C-618, Type C or Type F.
 - 1. 15% - 20% fly ash may be used in concrete poured and cured above 50° Fahrenheit.
 - 2. No fly ash allowed in polished concrete.
- C. Blended Hydraulic Cement: ASTM C595, excluding types S and SA.
- D. Ground Granulated Blast-Furnace Slag: ASTM C989, Grade 120.
 - 1. 25% - 35% granulated slag may be used in concrete poured and cured above 50° Fahrenheit

2.2 FINE AGGREGATE

- A. Sand: ASTM C-33. Clean, hard, natural sand, or manufactured sand, or a combination of both.

1. Source: From the same source throughout the work for each type of concrete. Approval subject to color evaluation.

2.3 COARSE AGGREGATE

- A. Normal Weight Concrete: ASTM C-33, ACI-211.1, ACI-304-1. Aggregate shall have similar color characteristics of sand and cement.
 1. Maximum Size Aggregate: Maximum of 1-1/2" (3/4" for post-tensioned concrete or concrete poured on metal deck) but not more than 3/4 of clear distance between forms and the reinforcing bar and 3/4 of minimum clear spacing between reinforcing bars, and as recommended in ACI-211.
- B. Grout for Masonry: ASTM C404; maximum size of aggregate shall be 3/8" but not more than 3/4" of the clear distance between the inside block face and the reinforcing bar.

2.4 WATER

- A. Clean and free from deleterious amounts of acids, alkalis or organic materials.

2.5 ADMIXTURES

- A. Modifiers: To accelerate the hardening of the concrete or to produce higher than normal strength at early periods; will not be permitted unless specifically approved. Do not use any admixture which will affect the concrete color. Do not use admixtures without written approval and strict quality control.
- B. Water-Reducing Admixtures: ANSI/ASTM C-494, Type A, and contain not more than 0.05% chloride ions.
 1. Manufacturers:
 - a. Euclid Chemical Co. - "Eucon WR-75"
 - b. Master Builders Technologies - "Pozzolith Normal" or "Polyheed"
 - c. Sika Chemical Corp. - "Plastocrete 161"
 - d. Chem-Masters Corp - "Chemtard"
 2. Products are subject to compliance to all project requirements.
- C. Accelerating Admixtures: ANSI/ASTM C-494, Type C, A non-corrosive, non-chloride set accelerating admixture that accelerates cement hydration resulting in shortened setting times and increased early age strengths, especially in cooler temperatures. Admixture shall not contain not more than 0.05% chloride ions.
 1. Manufacturers:
 - a. Master Builders Technologies - "Pozzolith 555"
 - b. Grace Construction Products - "PolarSet"
 2. Products are subject to compliance to all project requirements.
 3. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees Fahrenheit.
- D. Water-Reducing and Retarding Admixtures: ASTM C-494, Type D.
 1. Manufacturers:
 - a. Sika Chemical Corp. - "Plastiment"
 - b. Master Builders Technologies - "Pozzolith R"

- c. Gifford Hill - PSI 400N/PSI 400R
 2. Locations: Not permitted in footings or foundations. Retarding densifier shall be used as required by climatic conditions at the time of the pour as recommended by the manufacturer.
 3. Manufacturers Assistance: The admixture manufacturer shall be required to have available a qualified representative to assist in the proportioning and to advise on the use of the product for adjustment due to weather or job conditions.
- E. High Range Water-Reducing Admixture (Super Plasticizer): ASTM C-494, Type F or Type G and contain not more than 0.05% chloride ions.
1. Manufacturers:
 - a. W. R. Grace - "WRDA 19" or "Daracem"
 - b. Prokrete Industries, Inc. - "PSP"
 - c. Anti-Hydro - "Super P"
 - d. Sika Chemical Corp. - "Sikament 300"
 - e. ICI Americas Corp. - "Mighty 150"
 - f. Euclid Chemical Co. - "Eucon 37"
 - g. Gifford-Hill - "PSI Super"
 - h. Master Builders Technologies - "Rheobuild"
 2. Products are subject to compliance with all project requirements.
- F. Air Entraining Admixture: ASTM C-260; Air Content 6% +/- 1% (except as otherwise noted).
1. Manufacturers:
 - a. W. R. Grace - "Darex AEA" or "Daravair"
 - b. Sika Chemical Corp. - "Sika-AER"
 - c. Sonneborn/Contech - "Aerolith"
 - d. Master Builders Technologies: - "MB-VR" or "Micro-Air"
 - e. Gifford Hill - "Air-tite"
 2. Locations: Use in all concrete which is exposed to the weather. Air Entraining Admixture shall not be used in slabs with a trowel or decorative/polished finish.
- G. Calcium Chloride or admixture containing more than 0.05% chloride ions are not permitted.
- H. Corrosion Inhibitor: ASTM C494, Type C, containing a minimum of 30% calcium nitrite.
1. Manufacturer: W.R. Grace - DCI; Master Builders Technologies – Rheocrete CNI
 2. Rate = 3.0 gals/yd³
 3. Air Content = 5% minimum.
 4. Locations: Use in all concrete slabs, beams, columns, and walls of the parking structure (except footings and slab on grade).
 5. Manufacturer Assistance: The admixture manufacturer shall be required to have available a qualified representative to assist in the proportioning and to advise on the use of the product for adjustment due to weather or job conditions.

2.6 BONDING AGENTS

- A. Presoak existing concrete surface to a saturated surface dry condition immediately prior to pouring of adjacent concrete slab sections [new concrete topping slab or patch material].
 1. Location: All top surface slabs and other areas where sufficient exposed reinforcing exists to assure a good bond.
- B. Apply waterborne epoxy bonding agent to existing concrete surface immediately prior to

installation of new concrete.

1. Manufacturers:
 - a. Kaufman Products, Inc. - "Sure-Poxy 686"
 - b. Sika Corporation - "Sikadur 32"
 - c. SpecChem, LLC – "Specpoxy 2000"
2. Location: All overhead and vertical repair surfaces where sufficient exposed reinforcing does not exist to assure a good bond.

C. Apply cement slurry bond material ($f_c' = 4000$ psi) immediately prior to installation of concrete patch material.

1. Presoak existing concrete surface prior to installing bonding material.
2. Concrete patch material must be completed within 15 minutes of installing cement slurry.

2.7 NON-BONDING

A. Non-bonding agents shall conform to ASTM C-309, Type I and AASHTO M-148, Type I.

1. Products: "Tilt-Eez" by Dayton Products.

B. Non-bonding agents shall be applied in strict accordance with the manufacturer's recommendations.

2.8 CURING MATERIALS

A. Curing Compound: Liquid-Type membrane-forming; ASTM C-309, Type I, Class A. Moisture loss not more than 0.055 GR./SQ.CM. when applied at 200 SQ. FT./GAL.

1. Manufacturer:
 - a. "US Cure & Seal" by US Concrete Products
 - b. "Cure & Seal WB" by SpecChem LLC
 - c. EUCOCure VOX" by Euclid Chemical Co.
 - d. "Kure-N-Seal-W" by BASF
 - e. or approved equal

- In areas of colored concrete, use a curing compound that is recommended by the manufacturer of the color hardener

2. Note: Certified compatibility with approved surface sealing agents, mastics, adhesives, colored hardeners, finishes and deferred bonding, is required, before compound may be used where subsequent finishes are indicated.
3. VOC Content: Curing and sealing compounds shall have a VOC content of 700 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
4. Location: All concrete walls, slabs, beams, stairs and columns of the building prior to and immediately after removal of forms.
5. All polished concrete shall be wet-cured per CPAA recommendations in accordance with ACI 308R-01.

B. Curing Compound: Liquid-type, water based ASTM C-309, Type I, Class B. Curing compound shall be self-dissipating in 28 days and compatible with the silane sealer and bond breaking compound (see paragraph 2.7).

1. Manufacturer:
 - a. "Kurez DR-VOX or DR-100", - The Euclid Chemical Co.
 - b. "1100-Clear" – W. R. Meadows

- c. or approved equal
 2. Note: Curing compound shall be non-residual, dissipating, and rapidly decomposes when exposed to ultraviolet light, sunlight, abrasion or weathering. Certified compatibility with approved surface sealing agents, mastics, adhesives, colored hardeners, finishes and deferred bonding, is required, before compound may be used where subsequent finishes are indicated.
 3. VOC Content: Curing and sealing compounds shall have a VOC content of 100 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 4. Location: All concrete walls, slabs, beams, stairs and columns of the parking garage and on all site concrete walls prior to and immediately after removal of forms.
- C. Wet Curing: Concrete shall be protected against loss of moisture by covering with an impervious sheet curing conforming to ASTM C171-Table I, such as Bur-Lene by Max Katz Bag Co., Inc.
1. Locations: All surfaces which shall be protected by a traffic bearing waterproofing membrane, and/or are exposed to high temperatures and wind which prevents the curing compound from doing the job.

2.9 FINISHING AIDS

- A. Non-staining, non-debonding, low VOC concrete flatwork finishing aid
1. Manufacturers:
 - a. "MasterKure 111" by BASF Chemical Company
 - b. "EVAPRE-RTU" by W.R. Meadows
 - c. "Eucobar" by The Euclid Chemical Company
 - d. "AquaFilm J74RTU" by Dayton Superior Corporation
 - e. Or approved equal

2.10 SURFACE TREATMENTS

- A. Liquid Hardener: A clear penetrating, curing, sealing and hardening compound which results in increased abrasion resistance, and reduced permeability of the finished treated concrete surface.
1. Manufacturers:
 - a. "SpecHard" – SpecChem LLC
 - b. "Diamond Hard" - Euclid Chemical Co.
 - c. "Ashford Formula" - Curecrete Chemical Company, Inc.
 - d. Or approved equal.
 2. Locations: All interior concrete floor slabs and stairs left exposed at the completion of the project.
- B. Sealing Compound: Liquid-Type, membrane forming; ASTM C-309, Type I, Class A. Capable of preventing infiltration of water borne chlorides.
1. Manufacturers:
 - a. "Cure & Seal WB" by SpecChem LLC
 - b. "Kure-N-Seal-W" by BASF
 - c. Or approved equal.
 - In areas of colored concrete, use a sealing compound that is recommended by the manufacturer of the color hardener
 2. Locations: All interior concrete floor slabs, stairs and concrete walls left exposed at the completion of the project.
 - a. In casting bed areas, sealing compound shall be installed after bond breaker film

dissipates and breaks away and no residue remains. See Specification Section 03470 for further information.

2.11 ADJUSTABLE WEDGE INSERTS

- A. Type HW340 and LW340 with 3/4" diameter, ASTM A-307 bolts as manufactured by Hohmann and Barnard, Inc., or approved equal.

2.12 NON-SHRINK GROUT

- A. CRD C-621 and ASTM C 1107, factory pre-mixed non-metallic grout subject to compliance with requirements. Provide one of the following:
 - 1. "Masterflow 713"; Master Builders
 - 2. "MP Grout", SpecChem LLC
 - 3. "SonogROUT"; Sonneborn-Contech.
 - 4. "Euco-NS"; Euclid Chemical Co.
 - 5. "Five Star Grout"; U. S. Grout Co.
 - 6. "DuragROUT"; L & M Const. Chemical Co.

2.13 UNDERLAYMENT COMPOUND

- A. Free-flowing, self-leveling, pumpable, cement-based compound for applications from one inch thick to feathered edges with a minimum compressive strength shall be 3000 psi. Provide one of the following:
 - 1. "K-15" - Ardex, Inc.
 - 2. "SpecFlow" SpecChem LLC

2.14 CONCRETE MIXES

- A. Compressive Strengths: Minimum concrete compressive strengths are as follows:
 - 1. 3000 psi; 28-day compressive strength; minimum W/C ratio, 0.56 maximum. (Footing, Hambro Slabs, Slab on Grade and all other concrete unless noted otherwise.)
 - 2. 4500 psi; 28-day compressive strength; W/C ratio, 0.46 maximum. (All exterior concrete and retaining walls and associated footings.)
 - 3. 6000 psi; 28-day compressive strength; W/C ratio, 0.45 maximum. (Framed concrete slabs, beams and columns)
- B. Mix Design: Proportion by the procedure described in ACI 318. All concrete; ready-mixed; on site batch plant; mixed and transported in accordance with ASTM C-94, Alternate No. 1 or No. 2 and ACI 304.
 - 1. Responsibility: The Contractor is solely responsible for creating and paying for all concrete design mixes fully workable of required strengths that produce finishes acceptable to the Architect. All mixes shall be purchased from the same supplier throughout the work.
 - 2. In all concrete mixes with corrosive inhibitors, preconstruction trial mixes shall be utilized to assure proper mix water adjustments are made and compatibility with other admixtures is assured. The final design mix shall be used in at least one (1) job site pour (preferably the slab on grade) before utilization into the project structural members.
- C. Mixing: After introduction of water to the cement and aggregates, concrete which has been mixed longer than 1-1/2 hours or 300 revolutions, shall not be placed. In no case shall concrete

be used that has been mixed so long that the initial set of the concrete shall occur sooner than 15 minutes after placement.

1. Truck mixing: Trucks must be equipped with water gauges and revolution counters. Defer addition of water to latest possible revolution counters. Defer addition of water to latest possible time. When temperatures or other conditions cause a deviation in slump or setting characteristics, provide approved measures to maintain normal conditions.
2. Dry-batched: No water induced into the drum at the plant; mix at the site.

D. Slumps: ACI 301, paragraph 4.2.2.2. Proportion and design mixes to result in concrete slump at point of placement of not more than 8" after addition of HRWR.

E. Dry Density:

1. Structural Normal Weight Concrete: 148 lbs./c.f. maximum. (all concrete except as otherwise noted)

2.15 MASONRY GROUT MIX

A. Compressive Strengths: Minimum 28-day compressive strength shall be 3000 psi; standard weight; 5.5 bags (94 lbs.)/c.f. w/c = 0.60 maximum for all masonry grout.

B. Mix Design: Proportion per the requirements of ASTM C476 "Standard Specification for Grout for Masonry" ready mixed and transported in accordance with ASTM C-94, alternate No. 1 and ACI 304.

1. Responsibility: The Contractor is solely responsible for creating and paying for all grout design mixes fully workable, of required strengths that produce finishes acceptable to the architect. All mixes shall be purchased from the same supplier throughout the work.

C. Mixing: After introduction of water to the cement and aggregates, grout that has been mixed longer than 1.5 hours should not be placed. Because of its high slump, ready mix grout shall be continuously agitated after mixing until placement. In no case shall grout be used that has been mixed so long that the initial set of the concrete shall occur sooner than 15 minutes after placement.

1. Truck Mixing: Trucks must be equipped with water gauges and revolution counters. Defer addition of water to latest possible revolution counters. Defer addition of water to latest possible time. When temperatures or other conditions cause a deviation in slump or setting characteristics, provide approved measures to maintain normal conditions.

D. Slump: Water may be introduced at the plant to produce a maximum slump of 6". Additional water may be added at the jobsite immediately prior to placement to produce a maximum slump of 11".

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordination: Check forms, reinforcing steel and supports, expansion and contraction joints, and placement of built-in and embedded items. Verify drawing dimensions with actual field conditions. Inspect related work and adjacent surfaces. Report all conditions which prevent proper execution of this work.

1. Do not place concrete until foregoing related work has been completed and inspected.
 - B. Built-in and Embedded Items: Allow sufficient time for the various trades between erecting of forms and placing of concrete, to permit the proper installation of their work. Do not place concrete until embedded items have been coordinated and installed.
 1. Coordination: Refer to Formwork, also examine the drawings and specifications for work of other trades, especially for Mechanical and Electrical Work.
 2. Conduits: Do not allow conduits or pipes to be placed in the framed concrete slabs, beams, columns and walls.
 3. Conduits: Do not allow conduits or pipes placed in the concrete slab on grade to be spaced closer than three diameters on center or so spaced as to change the location of the reinforcement from that shown on the drawings.
 4. Precautions: Embedding of aluminum inserts or conduit in the concrete will not be permitted.
 5. Anchorage and Supports: Refer to Concrete Accessories and Miscellaneous Metals Sections for items to be embedded in the concrete. Refer to Formwork for installation.
 - C. Surface to Receive Concrete: Clean, well thawed, damp surfaces, free from standing water. Before placing concrete, remove all debris, water and ice from the places to be occupied by the concrete. Wood forms shall be thoroughly wetted (except in freezing weather) or oiled and the reinforcement cleaned of ice or other coatings. Do not place concrete on soft mud or dry porous earth (see Spec Section 31 2000).
 - D. Screed Levels: Set edge forms or bulkheads and wet intermediate screed strips for slabs to obtain the required elevations and contours in the finished slab surface. Provide and secure units sufficiently strong to support the types of screeds required.
 1. Alignment: Align the concrete surface to the elevation of the screed strips by the use of strike-off templates or accepted compacted types screeds.
- 3.2 CONVEYING AND PLACING
- A. Reference Standard: In accordance with requirements of Building Code Requirements for Reinforced Concrete, ACI 318.
 - B. Wood Runways: Provide for wheeled equipment for transporting concrete. Do not displace the resteel or vapor barrier.
 - C. Conveying: Rapidly handle from mixer to forms and deposit as nearly as possible in its final position to avoid segregation due to rehandling or flowing. Do not permit concrete during passage from mixer to final positioning to come in contact with aluminum surfaces.
 - D. Placement: Place concrete of required thickness, compact, level and screed to proper levels to receive finishes specified. Do not deposit partially hardened or retempered concrete. Do not place concrete contaminated by foreign matter.
 1. Bearing Walls and Columns: Brace and allow to cure twelve hours before placing concrete superimposed thereon, in accordance with ACI 301.
 2. Slab Reinforcement: Welded wire fabric reinforcing shall be placed at the proper height by installing support steel as specified in specification 03 2000.
 3. Slabs: Do not pour faster than can be properly leveled and compacted. Place at point of final repose, directly ahead of the screed bar, vibrating mass just ahead of the screed.

3.3 CONSOLIDATION: ACI 301.

- A. Compacting: Thoroughly tamp and spade fresh concrete to insure flow into all parts of forms and around reinforcement. Use caution when using vibrators and hand spades to prevent any injury to working face of forms, any movement of the reinforcement, or injury to the epoxy coating on the reinforcement.
- B. Concrete shall be placed in such a manner as to insure that alignment of column sleeves, embedded plates, and inserts remain unchanged. Special provisions shall be made to insure proper vibration of concrete around tendon bearing plates and inserts.

3.4 LEVELING AND SCREEDING

- A. All top surfaces of poured concrete shall be worked smooth and level. Do not sprinkle dry cement or mixture of cement and sand directly on the surface of the concrete to absorb moisture or to stiffen mix. Surfaces shall be brought to a finish level, free from defects, blemishes, ripples, trowel marks and other irregularities, including footprints and other depressions which may be cause for rejection.
- B. Screeds: Of such type and construction, and so spaced and located as to produce surface tolerances specified.
- C. Unformed Surfaces: Bring to proper levels and slopes, using screeds, and strike-off with a straightedge. Screed twice, the first to strike a full, rough level and move the concrete mass ahead. Follow this with necessary filling of low areas and another screeding to final level. Remove any puddles of "soup," excess water, or laitance. Pull screeds and screed supports and fill all depressions.
 - 1. Floating: Float to a true and uniform surface with no coarse aggregate visible.
- D. Levels and Lines: Establish and check levels and lines by instrument, and from time to time during pours. Finally check lines and levels, again by instrument, after straight edging and screeding. Correct any settlement and/or other irregularities greater than the allowable tolerances.
 - 1. Floor slabs on grade shall be finished to the following requirements:
 - a. The F-numbers which shall apply to the whole floor shall be a flatness $F_f = 40$ or higher, and a levelness $F_l = 25$ or higher.
 - b. The minimum local F-numbers which shall apply to the floor area bound by construction and/or control joints shall be a flatness $F_f = 27$ or higher, and a levelness $F_l = 19$ or higher.
 - c. The maximum 24 "curvature (value "q" as defined in ASTM E1155) shall not exceed 0.150 inch at any construction joint exposed to wheel traffic. The 24" curvature shall be measured with a Dipstick floor profiler or other instrument acceptable to the Owner. Measure at right angles to the joint, and make at least one measurement for each 20 feet of joint length. Measure within 72 hours of placing the second slab at the joint.
 - 2. The minimum local F-numbers for elevated concrete slab floor areas bound by a structural bay shall be a flatness $F_f = 22$ or higher, and a levelness not to exceed 3/8 inch within any structural bay.
 - 3. Exterior concrete stairs shall have the treads and landings sloped approximately 1/8" per 12" to assure that no water rests on a riser or the landings.

3.5 UNFORMED CONCRETE SURFACE FINISHES

- A. Reference Standard: All concrete finishes shall be specified designating in ACI 301.
- B. Troweled Finish: After concrete is sufficiently hardened to prevent drawing moisture and fines to the surface, finish trowel until matrix no longer accumulates on the trowel. Do not use cement, sand, or a mixture thereof to absorb excess moisture and do not add water to facilitate troweling. Perform second troweling until there is a distinct ringing sound under the trowel, and smooth, hard furnished surface is obtained. Use liquid curing membrane except where indicated. (See Products)
- C. Interior floor slabs shall have a smooth trowel finish.
- D. Exterior floor slabs:
 - 1. Provide medium-to-fine-textured Broom Finish by drawings a soft-bristle broom across float-finished concrete, perpendicular to line of traffic, to provide a uniform, fine-line texture.
 - 2. Provide medium-to-coarse-textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.6 LIMITATIONS OF OPERATIONS

- A. No vehicular traffic shall be permitted within 40 ft. of a concrete deck pour for at least 24 hours after the pour.
- B. No construction activity shall be permitted on a concrete deck pour for at least 3 days and until the concrete has achieved at least 75 percent of its specified 28-day compressive strength.

3.7 SURFACING CURING

- A. Application: Apply liquid-type combination curing compound as soon as new concrete is hard enough to support applicator's weight and as soon after final troweling as possible, in such a manner as to prevent marring or damaging troweled surface. Apply in strict accordance with the manufacturer's recommendations, and with the initial application done under the direct supervision of the manufacturer's representative.
- B. Wet Curing Methods: Perform curing of slabs by moisture-retaining cover curing as herein specified.
 - 1. Cover concrete surfaces with moisture retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape. Curing materials shall be securely fastened down at all times.
 - 2. Concrete shall be maintained above 55 degrees in a moist condition for at least the first seven days after placing. Curing shall be accomplished using blankets and heaters in cold weather to provide adequate protection for the concrete from freezing while still keeping the concrete moist as previously specified.
- C. During period of dry winds, low humidity, high temperatures, and other conditions causing rapid drying, protect fresh concrete with an evaporation retardant (mono-molecular film) or fine fog spray of water applied immediately after screeding and bull floating. Maintain protection until final finishing and curing compounds are applied.

3.8 SURFACE SEALING

- A. Liquid Hardener Application: Apply to concrete surfaces that are clean, set and dry; not less than 60 days old. Surface must be free of any dust, dirt, and other foreign matter. Apply hardener in strict accordance with manufacturer's recommendation for standard duty finished floor. Apply by spray or flush onto surface and distribute minimum of 2 applications in accordance with manufacturer's instructions.
- B. Sealing Compound Application: The sealing and dustproofing application should be applied when all trades are completed and structure is ready for occupancy. Surface must be free of any dust, dirt, and other foreign matter. Use power tools and/or strippers to remove any incompatible sealers or coatings. Cleanse as required. Apply 2 coats, both at full strength to seal and dustproof the concrete. Allow first coat to dry overnight prior to application of second coat.

3.9 FORMED CONCRETE SURFACES (ACI 301)

- A. All exposed to view formed concrete finishes shall be as specified in ACI 301.
- B. All non-exposed to view formed concrete finishes shall be as specified in ACI 301.

3.10 CONCRETE SURFACE REPAIRS

- A. Repair method, products and procedures shall be submitted for approval prior to commencement of work.
- B. Patching Defective Areas:
 - 1. Repair and patch defective areas with repair mortar such as Precast Patch by SpecChem or Tamms Speedcrete – Redline immediately after removal of forms, when acceptable to Architect.
 - 2. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water to a saturated-surface-dry condition and install repair mortar in strict accordance with the manufacturer's specifications.
- C. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
- D. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- E. Repair concealed formed surfaces, where possible that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.
- F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.

- G. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.03" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.
 - H. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.
 - I. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Architect.
 - J. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete to a saturated-surface-dry condition. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.
 - K. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces to a saturated-surface-dry condition. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack when concrete surface is still saturated. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
- 3.11 NONCONFORMING STRENGTH: If strength of laboratory control cylinders at 7 or 28 days for any portion of the work falls below required strengths, the Structural Engineer has the right to order a change in proportions for the remaining work, and/or may order additional reshoring and moist-curing of the sections in question. In addition, at his discretion, the Structural Engineer has the right to require tests in accordance with ASTM C-42 (cored cylinders) or order load tests on portions of buildings so affected. Perform all test changes as noted above and/or other required corrective measures as directed by the Structural Engineer at no expense to the Owner, regardless of test results. The structural Engineer is the sole interpreter of additional tests and his judgement is final.
- 3.12 RESPONSIBILITY
- A. The Owner shall employ and pay for services of an independent Testing Laboratory, and an Inspection Agency, acceptable to the Structural Engineer to perform the specified tests and inspection. (ACI 301).
 - B. Approvals: The design mix and/or acceptance of the test reports do not in any way relieve the Contractor of his responsibility to insure that the strength, slump and quality of the in-place concrete meets the requirements of the Contract Documents.
 - C. Rejection: The Owner's representative will have the right to reject concrete which does not meet strength and other requirements of the Contract Documents.
 - D. Mixing Design: If the strength of any test cylinder or grout sample fails to meet the ultimate compressive strength, the Owner's representative shall have the right to require a change in proportions to ensure adequate strengths in the remainder of the project.

- E. Additional Testing: Owner's representative shall have the right to require testing of the concrete by coring, loading or other means, or removal of that portion of the construction covered by those tests, all costs of which to be borne by the Contractor.

3.13 CONTRACTOR'S DUTIES: Comply with ACI 301, including but not limited to the following:

- A. Batch Plant Samples: If desired by Contractor, or so requested because of known or indicated problems.
- B. Storage: Provide suitable storage facilities at the job site for test cylinders.
- C. Additional Costs: Pay all costs for coring, drilling, additional testing, remedies and corrections of work which does not meet strength and other requirements of the Contract Documents and/or if failure to perform required duties. Comply with ACI 301.
- D. Other Test Cylinders: For other than compressive strength, such as to determine when forms may be stripped, shall be paid for by the Contractor requesting same.

3.14 TESTING AND INSPECTION

- A. Field and laboratory testing of poured in place concrete and masonry grout shall comply with the testing requirements of Section 01 4000, Quality Control. Perform all specified inspections and tests in accordance with ACI 301, IBC, and ACI 311 "Recommended Practice for Concrete Inspection". Testing Agency shall meet the requirements of ASTM E 329:
- B. Slump Tests: Consistency shall be determined at the project site by means of slump test in accordance with C-143. Results of slump test shall appear on the test reports. Slump tests shall be made at the same time as test cylinders are made and when so directed by the Structural Engineer.
- C. Compression Tests: Each test consists of 4 concrete test cylinders or 4 grout samples broken under compression. Two cylinders/samples shall be broken 7 days after making; and two cylinders/samples shall be broken at 28 days. For slabs and beams, the 2 secondary cylinders shall be broken when requested by the Contractor to determine concrete strengths for the post-tensioned stressing operation. Strength results of all cylinders/samples broken at 7 days shall achieve a minimum of 65% of the ultimate design strength, 28 days - 100%.
 - 1. Concrete Test Cylinders: 6" diameter x 12" (or 4" diameter x 8" if maximum aggregate size is less than 1") made at the point of deposit, molded, transported cured and tested in accordance with ASTM C-31. One set of compressive test cylinders shall be made for each 100 yards poured. Make not less than one set of cylinders for each day's pour and each class of concrete.
 - 2. Masonry Grout Samples: 3-1/2" square x 7" made at the point of deposit, molded, transported cured and tested in accordance with ASTM C1019 - "Standard Method of Sampling and Testing Grout". One set of grout cubes shall be made for each 30 yards poured. Make not less than one set of cubes for each day's pour.
 - 3. Grout Cubes for Post-Tensioning Ducts: 2" cube made at the point of deposits molded, transported and tested by the Testing Agency. Test cubes are to be molded and cured in accordance with ASTM C-109.
- D. Density Test: When required, density test shall be performed in accordance with ASTM C-138.
- E. Air Content: When required, air content test shall be performed per ASTM C-173 (volumetric

method for normal weight or light weight concrete) or ASTM C-231 (pressure method for normal weight concrete).

- F. In-Situ Bond Strength Testing: Bond strength of new topping slab to existing concrete structure shall be greater than 150 psi confirmed by in-situ direct tension pull-off method in accordance with ASTM C1583. Perform a minimum of 3 tests in different areas of the structure.
- G. Laboratory Test Reports: Submit to the Structural Engineer immediately upon completion of each test. Test reports shall contain the following information:
1. Exact mix, including quantities of admixtures, etc.
 2. Date of pour.
 3. Exact location of pour in building.
 4. Slump (at truck or on deck specified).
 5. Percentage of air-entrained.
 6. 7-day test results for first two cylinders tested.
 7. 28-day test results shall be reported with both 7 and 28 day results indicated on the same report.
 8. Temperature at time of pour.
- G. Grout Flow Tests: Pumpability of grout shall be verified per U.S. Corps of Engineers method CRD-C79 prior to grouting of all post-tension beams. Results of flow test shall appear on the test reports. Slump tests shall be made at the same time as the grout cubes are made and when so directed by the Structural Engineer.
- H. Slab on Grade Floor Flatness and Levelness Testing: Performed per ASTM E1155 within 72 hours of initial pouring of the slab by an experienced independent testing agency approved by the Architect. Submit results to the Contractor, Owner, and Architect immediately after completion so corrective measures can be completed in a timely fashion.
- I. Testing Laboratory Duties
1. Furnish all materials for making concrete test cylinders and grout cubes.
 2. At test intervals, immediately transport concrete test cylinders, masonry grout samples and grout cubes to the Test Laboratory.
 3. Provide verbal results of concrete test cylinders when required by the contractor.
 4. Perform concrete density test when required by the Structural Engineer.
 5. Provide test reports of all laboratory testing in a timely fashion to the Structural Engineer and Contractor.
- J. Inspection Agency Duties
1. Comply with inspection requirements of Section 01 4000, Quality Control Services. Inspect concrete operations and completed work for conformance with Contract Documents and as indicated in ACI 301.
 2. Assign qualified personnel to be on site at all times when operations are scheduled. The Contractor shall note that no concrete operations shall be permitted in their absence.
 3. Perform slump tests for all concrete, and masonry grout, and air content tests as specified above. Forward results of these tests to Testing Laboratory for incorporation into laboratory test reports.
 4. Make concrete test cylinders and masonry grout cubes in molds provided by Testing Laboratory and masonry grout samples using 3 blocks to form a 4" x 4" x 8" sample.
 5. Site inspection of poured in placed concrete shall include, but is not limited to the following:

- a. Insure all concrete and masonry reinforcement is properly inspected per specifications 03 2000, 03 2300, and Division 4 – Masonry
 - b. Precast concrete plank erection, grouting, and concrete underlayment installation.
 - c. Masonry grouting operation.
 - d. Concrete demolition and preparation of existing concrete surface.
 - e. Slab curing procedures.
 - f. Concrete surface preparation for membrane installation.
 - g. Application of concrete hardener and sealer.
6. Submit daily reports outlining conformance and exceptions of concrete operation to contract documents.

3.15 CONTRACTOR'S RESPONSIBILITY

- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 03 30 00

SECTION 03 30 53

CAST IN PLACE CONCRETE WALL

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS:

Drawings and general provisions of the Contract, including Westchester County Health Care Corporation General Conditions and any Supplementary Conditions and applicable portions of Division 1 of the Specifications apply to this Section.

1.02 DESCRIPTION OF WORK:

- A. The Contractor shall furnish all labor, materials, and equipment required to perform all operations in connection with the installation of a concrete wall in accordance with the lines and grades shown on the project drawings.

1.03 RELATED DOCUMENTS

- A. Section 31 20 00 – Earthwork.

1.04 SUBMITTALS

- A. The contractor shall submit shop drawings for submittal to the Engineer for review and approval with design calculations for the retaining wall system prepared and stamped by a Professional Engineer registered in the state of New York State.

PART 2 – MATERIALS

2.01 CONCRETE WALL

- Concrete with 28-day compressive strength of 4,000 psi
- Reinforcing steel with yield strength of 60,000 psi

2.02 FINISH:

- A. Unless specified otherwise, the exposed wall shall be concrete gray in color with a smooth steel form surface free of voids, cracks, pitting and irregular surface.
- B. The exposed surfaces of the wall shall be finished with a seal coating after installation.

PART 3 - EXECUTION

- 3.01** Refer to DIVISION 3 – CONCRETE for the placement and forming of concrete wall systems.
- 3.02** The subgrade is to be compacted to 95% modified proctor dry density ASTM 1557, prior to placement of the footings.

END OF SECTION 03 30 53

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 04 - MASONRY

04 22 00	CONCRETE UNIT MASONRY
04 26 13	MASONRY VENEER
04 40 00	STONWORK
04 72 00	CAST STONE MASONRY

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SECTION 04 22 00

CONCRETE UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units.
 - 2. Mortar and grout.
 - 3. Steel reinforcing bars.
 - 4. Masonry-joint reinforcement.
 - 5. Miscellaneous masonry accessories.
 - 6. Mortar and grout materials.
- B. Products Installed but not Furnished under This Section:
 - 1. Steel lintels in unit masonry.

1.3 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
 - 2. Reinforcing Steel: Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing agency.
- B. Material Certificates: For each type and size of the following:
 - 1. Masonry units.

- a. Include material test reports substantiating compliance with requirements.
 - b. For masonry units used in structural masonry, include data and calculations establishing average net-area compressive strength of units.
2. Cementitious materials. Include name of manufacturer, brand name, and type.
 3. Mortar admixtures.
 4. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
 5. Grout mixes. Include description of type and proportions of ingredients.
 6. Reinforcing bars.
 7. Joint reinforcement.
- C. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.
1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C109/C109M for compressive strength, ASTM C1506 for water retention, and ASTM C91/C91M for air content.
 2. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.
- D. Statement of Compressive Strength of Masonry: For each combination of masonry unit type and mortar type, provide statement of average net-area compressive strength of masonry units, mortar type, and resulting net-area compressive strength of masonry determined according to TMS 602/ACI 530.1/ASCE 6.
- E. Cold-Weather and Hot-Weather Procedures: Detailed description of methods, materials, and equipment to be used to comply with requirements.
- 1.6 QUALITY ASSURANCE
- A. Testing Agency Qualifications: Qualified according to ASTM C1093 for testing indicated.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
 - B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
 - C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
 - D. Deliver preblended, dry mortar mix in moisture-resistant containers. Store preblended, dry mortar mix in delivery containers on elevated platforms in a dry location or in covered weatherproof dispensing silos.
 - E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.8 FIELD CONDITIONS

- A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides of walls, and hold cover securely in place.
- B. Do not apply uniform floor or roof loads for at least 12 hours and concentrated loads for at least three days after building masonry walls or columns.
- C. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
 - 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at the end of each day to prevent rain from splashing mortar and dirt onto completed masonry.
- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and higher and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from single source from single manufacturer for each product required.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color for exposed masonry, from single manufacturer for each cementitious component and from single source or producer for each aggregate.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide structural unit masonry that develops indicated net-area compressive strengths at 28 days.

1. Determine net-area compressive strength of masonry by testing masonry prisms according to ASTM C1314.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6 except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.4 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
 2. Provide square-edged units for outside corners unless otherwise indicated.
- B. CMUs: ASTM C90.
 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 1900 psi.
 2. Density Classification: Normal weight, 125 lb/cu. ft. or greater, unless otherwise indicated.
 - a. Provide lightweight, less than 105 lb/cu. ft., where required for fire-resistance rated masonry construction indicated.
 3. Size (Width): Manufactured to dimensions 3/8 inch less-than-nominal dimensions.
- C. Concrete Building Brick: ASTM C55.
 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2500 psi.
 2. Density Classification: Normal weight.
 3. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

2.5 CONCRETE AND MASONRY LINTELS

- A. General: Provide one of the following:

1. Concrete Lintels: ASTM C1623, matching CMUs in color, texture, and density classification; and with reinforcing bars indicated. Provide lintels with net-area compressive strength not less than that of CMUs.
2. Concrete Lintels: Precast or formed-in-place concrete lintels complying with requirements in Section 03 20 00 "Concrete Reinforcing," and with reinforcing bars indicated.
3. Masonry Lintels: Prefabricated or built-in-place masonry lintels made from bond beam CMUs matching adjacent CMUs in color, texture, and density classification, with reinforcing bars placed as indicated and filled with coarse grout. Cure precast lintels before handling and installing. Temporarily support built-in-place lintels until cured.

2.6 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
 1. Alkali content shall not be more than 0.1 percent when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Aggregate for Mortar: ASTM C144.
 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 4. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- E. Aggregate for Grout: ASTM C404.
- F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Euclid Chemical Company (The); an RPM company; Accelguard 80.
 - b. GCP Applied Technologies Inc.; Morset.
- G. Water: Potable.

2.7 REINFORCEMENT

- A. Uncoated Steel Reinforcing Bars: ASTM A615/A615M or ASTM A996/A996M, Grade 60.
- B. Reinforcing Bar Positioners: Wire units designed to fit into mortar bed joints spanning masonry unit cells and to hold reinforcing bars in center of cells. Units are formed from 0.148-inch steel wire, hot-dip galvanized after fabrication. Provide units designed for number of bars indicated.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Heckmann Building Products, Inc.; No. 376 Rebar Positioner.
 - b. Hohmann & Barnard, Inc.; #RB or #RB-Twin Rebar Positioner.
 - c. Wire-Bond; O-Ring or Double O-Ring Rebar Positioner.

C. Masonry-Joint Reinforcement, General: Ladder type complying with ASTM A951/A951M.

1. Interior Walls: Hot-dip galvanized carbon steel.
2. Exterior Walls: Hot-dip galvanized carbon steel.
3. Wire Size for Side Rods: 0.148-inch (nominal 9-gage) diameter.
4. Wire Size for Cross Rods: 0.148-inch (nominal 9-gage) diameter.
5. Spacing of Cross Rods: Not more than 16 inches o.c.
6. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

2.8 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D2000, Designation M2AA-805 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D226/D226M, Type I (No. 15 asphalt felt).

2.9 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 1. Do not use calcium chloride in mortar or grout.
 2. Use portland cement-lime mortar unless otherwise indicated.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated or needed to provide required compressive strength of masonry.
 1. For masonry below grade or in contact with earth, use Type M.
 2. For reinforced masonry, use Type S.
 3. For mortar parge coats, use Type S or Type N.
 4. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
 5. For interior nonload-bearing partitions, Type O may be used instead of Type N.

- D. Grout for Unit Masonry: Comply with ASTM C476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C476, Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi.
 3. Provide grout with a slump of 8 to 11 inches as measured according to ASTM C143/C143M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
1. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
 2. Verify that foundations are within tolerances specified.
 3. Verify that reinforcing dowels are properly placed.
 4. Verify that substrates are free of substances that would impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Build chases and recesses to accommodate items specified in this and other Sections.
- B. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- C. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

3.3 TOLERANCES

- A. Dimensions and Locations of Elements:
1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
 2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/2 inch.
 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height or 1/2 inch total.
- B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
3. For vertical lines and surfaces do not vary from plumb by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 feet, 1/4 inch in 20 feet, or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2-inch maximum.
6. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4 inch in 10 feet, or 1/2-inch maximum.
7. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16 inch.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed bed joints, do not vary from bed-joint thickness of adjacent courses by more than 1/8 inch.
3. For head and collar joints, do not vary from thickness indicated by more than plus 3/8 inch or minus 1/4 inch.
4. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.4 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 4 inches. Bond and interlock each course of each wythe at corners. Do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by stepping back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.
- E. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- F. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- G. Where built-in items are to be embedded in cores of hollow masonry units, place a layer of metal lath, wire mesh, or plastic mesh in the joint below, and rod mortar or grout into core.

- H. Fill cores in hollow CMUs with grout 24 inches under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.
- I. Build nonload-bearing interior partitions full height of story to underside of solid floor or roof structure above unless otherwise indicated.
 - 1. Install compressible filler in joint between top of partition and underside of structure above.
 - 2. Fasten partition top anchors to structure above and build into top of partition. Grout cells of CMUs solidly around plastic tubes of anchors and push tubes down into grout to provide 1/2-inch clearance between end of anchor rod and end of tube. Space anchors 48 inches o.c. unless otherwise indicated.
 - 3. Wedge nonload-bearing partitions against structure above with small pieces of tile, slate, or metal. Fill joint with mortar after dead-load deflection of structure above approaches final position.
 - 4. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Section 07 84 43 "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay hollow CMUs as follows:
 - 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 - 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 - 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 - 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid CMUs with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- C. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- D. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.
- E. Cut joints flush where indicated to receive waterproofing unless otherwise indicated.

3.6 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8 inch on exterior side of walls, 1/2 inch elsewhere. Lap reinforcement a minimum of 6 inches.
 - 1. Space reinforcement not more than 16 inches o.c.
 - 2. Space reinforcement not more than 8 inches o.c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings.
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.

- D. Provide continuity at corners by using prefabricated L-shaped units.
- E. Cut and bend reinforcing units as directed by manufacturer for continuity at corners, returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.7 CONTROL AND EXPANSION JOINTS

- A. General: Install control- and expansion-joint materials in unit masonry as masonry progresses. Do not allow materials to span control and expansion joints without provision to allow for in-plane wall or partition movement.
- B. Form control joints in concrete masonry using one of the following methods:
 - 1. Fit bond-breaker strips into hollow contour in ends of CMUs on one side of control joint. Fill resultant core with grout, and rake out joints in exposed faces for application of sealant.
 - 2. Install preformed control-joint gaskets designed to fit standard sash block.
 - 3. Install interlocking units designed for control joints. Install bond-breaker strips at joint. Keep head joints free and clear of mortar, or rake out joint for application of sealant.
 - 4. Install temporary foam-plastic filler in head joints, and remove filler when unit masonry is complete for application of sealant.

3.8 LINTELS

- A. Install steel lintels where indicated.
- B. Provide concrete or masonry lintels where shown and where openings of more than 12 inches for brick-size units and 24 inches for block-size units are shown without structural steel or other supporting lintels.
- C. Provide minimum bearing of 8 inches at each jamb unless otherwise indicated.

3.9 REINFORCED UNIT MASONRY

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
 - 1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 - 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.
 - 1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.

2. Limit height of vertical grout pours to not more than 60 inches.

3.10 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Inspections: Special inspections according to Level B in TMS 402/ACI 530/ASCE 5.
 1. Begin masonry construction only after inspectors have verified proportions of site-prepared mortar.
 2. Place grout only after inspectors have verified compliance of grout spaces and of grades, sizes, and locations of reinforcement.
 3. Place grout only after inspectors have verified proportions of site-prepared grout.
- C. Testing Frequency: One set of tests for each 5000 sq. ft. of wall area or portion thereof.
- D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.
- E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.
- F. Mortar Test (Property Specification): For each mix provided, according to ASTM C780. Test mortar for mortar air content and compressive strength.
- G. Grout Test (Compressive Strength): For each mix provided, according to ASTM C1019.

3.11 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of 3/4 inch. Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of 1/8 inch per foot. Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.12 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.

3.13 MASONRY WASTE DISPOSAL

- A. Salvageable Materials: Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.
- B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 04 22 00

SECTION 04 40 00

STONEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Work of this Section includes all labor, materials, equipment and services necessary to complete the dimensional stone as shown on the drawings and/or specified herein, including, but not limited to, the following:
 - 1. Stone Veneer Wall
 - 2. Stone Block Seat
 - 3. Amphitheater Stair Treads
 - 4. Stone Faced Concrete Wall
 - 5. Granite Inset
 - 6. Landscape Boulders
 - 7. Stone Garden
 - 8. Anchors, including dowels and other fastening devices as required to securely anchor the stone pieces in place. Where such items are to be built-in or cast-in to the structure under other Sections, coordinate and ensure proper location of same.
 - 9. Drilling, fitting and cutting of stone work as required for the proper completion of the work.
 - 10. Accessories and hardware required for complete installation
 - 11. Protection of stone during transit, storage, and erection and after installation. Cleaning of stone prior to acceptance
- B. Related Sections include the following:
 - 1. Section 320523 – Concrete for Exterior Improvements

1.3 QUALITY ASSURANCE

- A. The work of this Section shall be performed by Contractors who are regularly engaged in the engineering, manufacture, fabrication, finishing, and installation of similar work. Each contractor shall demonstrate to satisfaction of the Landscape Architect that he has successfully performed on comparable projects over the previous 5 years. All fabricating shall be by Fabricators for whom the Contractor is directly responsible. Contracting of any work included hereunder is specifically prohibited, except for that which may be approved by the Landscape Architect.
- B. The Contractor by commencing the work of this Section, assumes overall responsibility, as part of his warranty of the work, to assure that all assemblies, components and parts shown or required within the work of this Section, comply with the Contract Documents. The Contractor shall further warrant:
1. That all components, specified or required to satisfactorily complete the installation, are compatible with each other and with the conditions of installation and expected use.
 2. The overall effective integration and correctness of individual parts and the whole of the system.
 3. Compatibility with adjoining substrates, materials and work of other trades.
 4. There shall be no premature material failure due to improper design and fabrication of the stone. All materials are to fully perform to their normal life expectancy.
 5. Each and every piece of stone shall be subject to the Landscape Architect's approval, and any piece or pieces which may be rejected after having been set shall be carefully cut out and replaced with new suitable stone without delay, and without cost to the Owner. Any piece or pieces damaged in the removal and resetting of defective pieces shall also be removed, and suitable, approved pieces provided and set.
- C. Landscape Architect's inspection of the stone does not relieve the Contractor of his responsibility to provide all stonework in accordance with the approved samples and shop drawings.
- D. Examination Criteria: All examinations, selections, and approvals shall be for the purpose of achieving a final appearance of stone with the greatest possible uniformity, and will be based upon the following criteria.

1.4 FABRICATION AND ERECTION TOLERANCES

- A. Tolerances are as follows:
1. Except as noted, all joints shall be a nominal $\frac{1}{4}$ ".
 2. Joint dimension tolerance shall be -0 ", $+1/16$ ".
- B. Variation from plumb: For lines and surfaces of walls and arises, do not exceed $1/8$ " in 20 ft. max. For external corners, expansion joints and other conspicuous lines, do not exceed $1/8$ " any story or 20 ft. max.
- C. Variations from level: For grades shown for exposed sills, horizontal grooves and other conspicuous lines, do not exceed $1/8$ " in any bay or 30 ft. max.
- D. Offset at joints: Do not exceed plus or minus $1/32$ ".

1.5 SUBMITTALS

- A. Shop Drawings: Submit shop drawings for the fabrication and installation of all work and associated components. Include:
1. Wall elevations and sections showing wall cap on cast-in-place concrete wall at ¼” scale, typical wall unit elevation at 1” scale.
 2. Show details of all conditions for every member, joint, anchorage and provision for expansion and contraction and sealant application.
- B. Submit complete Cutting and Setting Drawings to Landscape Architect for approval. Shop sizes, shapes, thicknesses, jointing, anchoring, connection with other work, typical and special anchoring details, supports, dimensions, setting numbers, and color range for each piece of stone. Clearly indicate dimensions for locating slots in stone and for locating inserts to be built into concrete and masonry. Do not fabricate any stone (except for samples) until shop drawings have been approved by the Landscape Architect.
- C. Manufacturer’s Data
1. Submit copies of manufacturer's specifications and installation instructions for each stonework accessory required. Include data substantiating that materials comply with specified requirements.
- D. Samples
- | <u>Size</u> | <u>Description</u> |
|-------------|--|
| 6” x 6” | Submit four (4) sets of color range/ stone variation samples for each type of stone specified. |
- E. Manufacturer’s illustrated product literature and specifications.
- F. Installation instructions.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Protect stone during storage and construction against moisture, soiling, staining and physical damage
- B. Handle stone to prevent chipping, breakage, soiling or other damage. Do not use pinch or wrecking bars without protecting edges of stone with wood or other rigid materials. Lift with wide-belt type slings wherever possible; do not use wire rope or ropes containing tar or other substances which might cause staining. If required, use wood rollers and provide cushion at end of wood slides.
- C. Store stone on wood skids or pallets, covered with non-staining, waterproof membrane. Place and stack skids and stones to distribute weight evenly and to prevent breakage or cracking of stones. Protect stored stone from weather with waterproof, non-staining covers or enclosures, but allow air to circulate around stone.
- D. Protect mortar materials and stonework accessories from weather, moisture and contamination with earth and other foreign materials.

1.7 JOB CONDITIONS

- A. Contractor must review installation procedures and coordination with other work, with Contractor and other trades whose work will be affected by stonework.
- B. Environmental Requirements
 - 1. Hot-Weather Requirements: Protect stonework when temperature and humidity conditions produce excessive evaporation of water from mortar setting beds and joint grout. Provide artificial shade and wind breaks and use cooled materials as required. Do not apply setting mortar or joint grout to substrates with temperatures of 100 degrees F (38 deg C) and above.
 - 2. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen sub-grade or setting beds. Remove and replace stonework damaged by frost or freezing conditions. Comply with cold weather limitations and requirements specified herein:
 - a. Protect stone paving material and components against freezing when atmospheric temperature is 40 degrees F (4 deg C) and falling. When conditions require, heat materials to provide mortar and grout temperatures between 40 and 120 degrees F (4 and 49 deg C).
 - b. Provide the following protection for completed portions of work for 24 hours after installation when the mean daily air temperature is as indicated: below 40 degrees F (4 deg C), cover with weather-resistant membrane; below 25 degrees F (minus 4 deg C), cover with insulating blankets; below 20 degrees F (minus 7 deg C), provide enclosure and temporary heat to maintain temperature above 32 degrees F (0 deg C).
 - c. Maintain minimum ambient temperatures of 50 degrees F (10 deg C) during installation of stone and for 7 days after completion, unless higher temperatures are required by fabricator's or supplier's instructions.
 - 3. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 degrees F (4 deg C) and above and will remain so until stone masonry has dried out, but not less than 7 days after completing cleaning.

1.8 PROTECTION

- A. Protect adjacent surfaces from damage. Protect exposed surfaces of stone units from damage or defacement. Prevent materials used for installing work of this Section from staining or damaging the exposed surfaces of stone units or the exposed surfaces of the adjoining construction.
- B. Protect all stone work from other materials that will cause staining or defacement. Stone subject to damage after setting shall be properly covered or protected.
- C. No lumber or other material liable to stain or deface the stone shall be used.

1.9 GUARANTEE

- A. Unless stated otherwise in these specifications, guarantee shall state that all work is in accord with drawings and specifications, as amended by any changes thereto authorized by the Landscape Architect, free from defects in materials and workmanship and weathertight for a

period of five (5) years from the date of acceptance of the work by the Owner. Contractor shall agree to repair or replace defective materials and workmanship during the guarantee period at no additional cost to the Owner.

- B. Defective materials and workmanship are hereby defined to include evidence of abnormal deterioration, aging or weathering of the work, structural failure of components resulting from exposure to normal load and forces, deterioration or discoloration of finishes in excess of normal weathering and aging, and failure to fulfill other specified performance requirements.
- C. Contractor shall be responsible for damage to the building and furnishings occasioned by defective materials or workmanship or damage as part of repairs to the stone cladding.
- D. The guarantee, the enforcement or lack of enforcement thereof, shall not deprive the Owner of other actions, rights or remedies available to him. Guarantee shall be in form approved by the Landscape Architect.

PART 2 - PRODUCTS

2.1 STONE MATERIALS

- A. Submit complete range of stone materials, colors and sizes specified below and as shown on contract drawings for Landscape Architect's approval prior to the commencement of work.
- B. All stone materials shall be supplied by Stone suppliers, local to the project site unless otherwise noted, or approved be equal.
- C. All stone materials shall be as follows:
 - 1. Stone Veneer Wall
 - a. Material: Purchase Street Blend stone veneer
 - b. Sizes: 4"-6" thick in varying sizes
 - c. Pattern: Modified Ashler
 - d. Finish: Rounded and weathered faces
 - 2. Stone Block Seat
 - a. Material: Granite block shall be Westchester type Gneiss as supplied by Furlong & Lee Stone Sales, Inc., 427 Morris Avenue Rockville Centre, NY 11570, or approved equal.
 - b. Sizes: 1.5'H x 2'W x 3'L
 - c. Finish: Top- Thermal; Exposed Sides and Ends- Natural Cleft; Unexposed Sides- Saw Cut
 - 3. Amphitheater Stair Treads
 - a. Material: Granite block shall be Westchester type Gneiss as supplied by Furlong & Lee Stone Sales, Inc., 427 Morris Avenue Rockville Centre, NY 11570, or approved equal.
 - b. Sizes: 6"H x 1'W x 4'L; 6"H x 1'-2"W x 4'L; 8"H x 1'-2"W x 4'L
 - c. Finish: Top- Thermal; Exposed Sides and Ends- Thermal; Unexposed Sides- Saw Cut

4. Stone Faced Concrete Wall
 - a. Material: Purchase Street Blend stone veneer as supplied by Furlong & Lee Stone Sales, Inc., 427 Morris Avenue Rockville Centre, NY 11570, or approved equal.
 - b. Sizes: 4"-6" thick in varying sizes
 - c. Pattern: Modified Ashler
 - d. Finish: Rounded and weathered faces
5. Granite Sett
 - a. Material: Granite inset as supplied by Furlong & Lee Stone Sales, Inc., 427 Morris Avenue Rockville Centre, NY 11570, or approved equal.
 - b. Color: Mesabi Black
 - c. Sizes: 3.5"x3.5"x3.5"
 - d. Finish: Top- Thermal; Sides- Saw Cut
6. Landscape Boulders
 - a. Boulders: Boulders shall be River Boulders as supplied by Wicki Stone, 17 Cemetery Road, Great Meadows, NJ 07838, or approved equal. Size shall be as depicted on the drawings.
 - b. Coarse aggregate base be AASHTO #57 stone.
7. Stone Garden
 - a. Boulders: Boulders shall be River Boulders as supplied by Wicki Stone, 17 Cemetery Road, Great Meadows, NJ 07838, or approved equal. Size shall be as depicted on the drawings.
 - b. Coarse aggregate base be AASHTO #57 stone.
 - c. River Jack Stone: River Jack stone shall be River Ovals as supplied by Wicki Stone, 17 Cemetery Road, Great Meadows, NJ 07838, or approved equal. Size shall be as depicted on the plans.

2.2 GENERAL STANDARDS

A. Quarry Supervision

1. Quarrying shall be supervised and coordinated by the stone fabricator to insure that the as-quarried block orientations will yield finished material with characteristics as described herein.
2. All stone shall be cut from matched blocks. Matched blocks shall mean blocks extracted from a single bed of stratum in the quarry. The use of blocks chosen at random, though similar in general character and color to that of the approved stone shall not be permitted, except by written permission of the Landscape Architect.

B. Criteria for Stone

1. Visual: All examinations, selections, and approvals shall be for the purpose of achieving a final appearance of stone with greatest possible uniformity, and will be based upon the following criteria:
 - a. All stone shall be of sound stock and uniform texture, and shall be free from holes, seams, shakes, clay pockets, spalls, stains, starts, and other defects which would impair the strength, durability and appearance of the work, as determined by the Landscape Architect.

- b. Inherent variations characteristic of the stone and the quarry from which the stone is to be obtained shall be brought to the attention of the Landscape Architect at the time the samples are submitted for approval, and shall be subject to approval of the Landscape Architect.
- c. All stone shall be selected for background color, veining, marking and matching, shall run in even shades, and shall be set accordingly.

2.3 STONE ACCESSORIES

- A. Manufacturer and General: Stone support systems, anchors and accessories shall be manufactured by a company specializing in the detail and fabrication of stone approved by the Landscape Architect. Provide all fastening devices, dowels, shims, expansion shields, etc., necessary to properly secure stone.
- B. Stainless Steel for All Accessories
 1. Fasteners – AISI Type 304, non-magnetic, ASTM A67.
- C. Setting Pads: Setting pads shall be lead; or plastic.
- D. Portland Cement Setting Mortar and Joint Mortar/ Grout Materials.
 1. Portland Cement: ASTM C 150, Type I or II. For joint mortar/ grout provide of natural color or white as required to produce joint color required. Cement shall in no case contain more than .03% by weight of soluble alkali. Submit mill certificates of cement and certified analysis from an approved testing laboratory.
 2. Hydrated lime: ASTM C 207, Type S.
 3. Aggregate: ASTM C 144, except graded with 100% passing No. 16 sieve, non-staining or otherwise graded to comply with latex-additive manufacturer's requirements.
 4. Colored Aggregate: Ground marble, granite, or other sound stone; selected to produce required grout color.

Latex Additive: Styrene-butadiene-rubber or acrylic-resin water emulsion serving as replacement for part or all of gauging water, of type specifically recommended by admixture manufacturer for use with job-mixed Portland cement and aggregate, and not containing a retarder.

1. Provide Latex Additive material as manufacturer by:
 - a. Boiardi Products Corp.
 - b. Custom Building Products
 - c. Laticrete International, Inc.
 - d. Or approved equal.

2. Latex Additive material manufacturer shall perform pre-construction compatibility and adhesion testing of mixed setting bed and joint mortars/ grouts with stone material as specified.

Colored Mortar Pigments for Joint Mortar/ Grout: Natural and synthetic iron and chromium oxides, compounded for use in joint mortar/ grout mixes. Use only pigments that have proved through testing and experience to be satisfactory for use in Portland cement mixes, with latex admixtures. Provide integral, non-fading colorant made by Davis Colors, Scofield, or approved equal; color selected by the Landscape Architect.

Water: Potable, clear and free of deleterious materials which would impair the quality of the mortar/ grout.

Latex- Portland Cement Grout: ANSI A118.6, composition as follows:

1. Packaged , dry grout mix consisting of Portland cement, graded aggregate, and ethylene vinyl acetate in the form of a re-emulsifiable powder to which only water is added at Project site.
2. Dry Grout Mixture: Factory-mixed or job-mixed sanded grout consisting of the following:
 - 1.) Portland Cement
 - 2.) Aggregate
 - 3.) Colored Mortar Pigments for Grout

- E. Cast-in-place Concrete: as specified under Section 32 05 23 – Concrete for Exterior Improvements.
- F. Geotextile Fabric shall be Mirifi 160N as manufactured by TenCate Geosynthetics Americas.

2.4 MORTAR AND GROUT MIXES

- A. General: Based on Pre-construction Compatibility and Adhesion Testing and resultant test reports and subject to approval of Landscape Architect, comply with latex admixture manufacturers' written instructions for mix proportions, mixing equipment, mixer speeds, mixing containers, mixing times, and other procedures needed to produce setting-bed and joint materials of uniform quality and with optimum performance characteristics. Discard mortars when they have reached their initial set
- B. Cement-Paste Bond Coat: Mix bond coat to a consistency similar to that of thick cream and consisting of either neat cement and water or cement, sand, and water.
 1. For latex-modified Portland cement setting-bed mortar, substitute latex admixture for part or all of water per directions of latex-additive manufacturer.
- C. Latex-Modified Portland Cement Setting Bed Mortar: Proportion and mix Portland cement, aggregate, and latex additive for setting bed to comply with directions of latex-additive manufacturer and as necessary to produce stiff mixture with a moist surface when bed is ready to receive stones.

- D. Latex-Modified Portland Cement Joint Mortar/Grout: Add latex additive to dry mortar/grout mix in proportion and concentration recommended by latex-additive manufacturer. Proportion cement and aggregate to comply with directions of latex-additive manufacturer.
 - 1. Job-Mixed, Pigmented Grout: Select and proportion pigments with other ingredients to produce color required. Do not exceed pigment-to-cement ratio of 1 to 10, by weight.

- E. Mixing, General:
 - 1. Setting Mortar: Conform to ASTM C-270, Type M or N, Portland cement/ lime mortar.
 - 2. Pointing Grout:
 - a. 1 part non-staining white cement with color ingredient
 - b. 6 parts clean selected white sand to be compatible with the colored cement; sand to pass No. 16 sieve
 - c. 1 part hydrated lime to make as still a mix can be worked
 - d. Water and/ or Latex Additive as required.
 - 3. Mix cementitious materials, admixtures, and aggregate with the proper amount of water consistency which will result in a homogenous, still and plastic mix.
 - 4. Mix mortar in small batches by approved mechanical mixes. Monitor volume of materials per batch carefully.
 - 5. Retempering of mortar will not be permitted, and mortar that has been allowed to stand more than on or two hours shall not be used. Mortar shall be mixed and kept tempered so that it will, at all times, contain as much water as it is able to carry.

2.5 CUTTING, DRILLING AND FITTING

- A. Provide holes and sinkages required for anchors, dowels, other devices required to support and/or suspend stone, and to accommodate other items which connect to or penetrate the stone.

- B. Include all cutting, drilling and fitting of stone work required to accommodate the work of other trades. In cutting and fitting, carefully cut and grind edges to a neat tight fit. Do cutting in such manner so as not to impair strength or appearance of stone. Use physical templates for all cutting and drilling; obtain required templates from proper trades.

PART 3 - EXECUTION

3.1 GENERAL

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

- B. Examine the areas and conditions where stone assembly are to be installed and correct any conditions detrimental to them properly and timely. Do not proceed with the work until unsatisfactory conditions are corrected to permit proper installation of the work.

END OF SECTION 04 40 00

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SECTION 04 43 13.16

ADHERED STONE MASONRY VENEER

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Stone masonry adhered to unit masonry backup.
- 2. Stone masonry adhered to cold-formed metal framing and sheathing.

- B. Related Requirements:

- 1. Section 04 20 00 "Unit Masonry" for concealed flashing.
- 2. Section 05 50 00 "Metal Fabrications" for furnishing steel lintels and shelf angles for stone masonry.
- 3. Section 07 62 00 "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each variety of stone, stone accessory, and manufactured product.
- B. Samples for Initial Selection: For colored mortar and other items involving color selection.
- C. Samples for Verification:
 - 1. For each stone type indicated. Include at least five Samples in each set, and show the full range of color and other visual characteristics in completed Work.
 - 2. For each color of mortar required.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. List of Materials Used in Constructing Mockups: List generic product names together with manufacturers, manufacturers' product names, supply sources, and other information as required to identify materials used. Include mix proportions for mortar and source of aggregates.

1. Neither receipt of list nor approval of mockups constitutes approval of deviations from the Contract Documents contained in mockups unless Architect approves such deviations in writing.

C. Material Test Reports:

1. Stone Test Reports: For each stone variety proposed for use on Project, by a qualified testing agency, indicating compliance with required physical properties, other than abrasion resistance, according to referenced ASTM standards. Base reports on testing done within previous five years.
2. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer, indicating that sealants will not stain or damage stone. Include interpretation of test results and recommendations for primers and substrate preparation needed for adhesion.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs experienced stonemasons and stone fitters.
- B. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 1. Build mockup of typical wall area as shown on Drawings.
 - a. Include stone coping at top of mockup.
 - b. Include a sealant-filled joint at least 16 inches long in mockup.
 - c. Include through-wall flashing installed for a 24-inch length in corner of mockup approximately 16 inches down from top of mockup, with a 12-inch length of flashing left exposed to view (omit stone masonry above half of flashing).
 - d. Include metal studs, sheathing, building paper or wrap, drainage material, and flashing in exterior masonry-veneer wall mockup.
 2. Protect accepted mockups from the elements with weather-resistant membrane.
 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Sealant Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for compatibility and adhesion testing according to sealant manufacturer's standard testing methods and Section 07 92 00 "Joint Sealants," Samples of materials that will contact or affect joint sealants.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- B. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

- C. Deliver preblended, dry mortar mix in moisture-resistant containers designed for use with dispensing silos. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, in a dry location, or in covered weatherproof dispensing silos.

1.9 FIELD CONDITIONS

- A. Protection of Stone Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed stone masonry when construction is not in progress.
 - 1. Extend cover a minimum of 24 inches down both sides, and hold cover securely in place.
- B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining stone masonry face.
 - 1. Protect base of walls from rain-splashed mud and mortar splatter, using coverings spread on the ground and over the wall surface.
 - 2. Protect sills, ledges, and projections from mortar droppings.
 - 3. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
 - 4. Turn scaffold boards near the wall on edge at end of each day to prevent rain from splashing mortar and dirt on completed stone masonry.
- C. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than seven days after completing cleaning.
- D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

1.10 COORDINATION

- A. Advise installers of other work about specific requirements for placement of flashing and similar items to be built into stone masonry.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone: Obtain stone, from single quarry with resources to provide materials of consistent quality in appearance and physical properties.
- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of uniform quality for each cementitious component from single manufacturer and each aggregate from single source or producer.

2.2 EXTERIOR MANUFACTURED STONE MASONRY VENEER UNITS

- A. Products: Subject to compliance with requirements, provide the following:
 - 1. Creative Mines LLC; Craft Farmhouse Ledge Stone.
- B. Veneer Unit Properties: Precast veneer units consisting of portland cement, lightweight aggregates, and mineral oxide pigments.
 - 1. Compressive Strength: ASTM C192 and ASTM C39, greater than 1,800 psi.
 - 2. Shear Bond Strength to Mortar: ASTM C482: 50 psi, minimum.
 - 3. Water Absorption: UBC Standard 15-5, less than 22 percent
 - 4. Freeze-Thaw Test: ASTM C67, 50 cycles, less than 3 percent weight loss and no disintegration.
 - 5. Fire Resistance: ASTM E119 or UL 263.
 - 6. Maximum Veneer Unit Weight: 15 psf.
- C. Color: Greentea.

2.3 MORTAR MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or Type II, except Type III may be used for cold-weather construction; natural color or white cement may be used as required to produce mortar color indicated.
 - 1. Low-Alkali Cement: Not more than 0.60 percent total alkali when tested according to ASTM C114.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Essroc; Saylor's Plus.
 - b. Holcim (US) Inc.; Rainbow Mortamix Custom Color Cement/Lime.
 - c. Lafarge North America Inc.; Eaglebond.
 - d. Lehigh Hanson; HeidelbergCement Group; Lehigh Custom Color Portland/Lime Cement.
- D. Colored Portland Cement-Lime Mix: Packaged blend of portland cement, hydrated lime, and mortar pigments. Mix shall produce color indicated or, if not indicated, as selected from manufacturer's standard colors. Pigments shall not exceed 10 percent of portland cement by weight.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Holcim (US) Inc.; Rainbow Mortamix Custom Color Cement/Lime.
 - b. Lafarge North America Inc.; Eaglebond.
 - c. Laticrete International, Inc.; LATICRETE MVIS™ Lightweight Mortar.
 - d. Lehigh Hanson; HeidelbergCement Group; Lehigh Custom Color Portland/Lime Cement.

- E. Aggregate: ASTM C144 and as follows:
1. For pointing mortar, use aggregate graded with 100 percent passing No. 16 sieve.
 2. White Aggregates: Natural white sand or ground white stone.
 3. Colored Aggregates: Natural-colored sand or ground marble, granite, or other sound stone; of color necessary to produce required mortar color.
- F. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Euclid Chemical Company (The); an RPM company; Accelguard 80.
 - b. GCP Applied Technologies Inc.; Morset.
 - c. Sonneborn Products; Trimix NCA.
- G. Water: Potable.

2.4 STONE TRIM ANCHORS

- A. Stone Trim Anchors: Units fabricated with tabs or dowels designed to engage kerfs or holes in stone trim units and holes for fasteners or postinstalled anchor bolts for fastening to substrates or framing as indicated.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Canaren Inc.
 - b. Heckmann Building Products, Inc.
 - c. Hohmann & Barnard, Inc.
 - d. Meadow Burke.
- B. Materials: Fabricate anchors from stainless steel, ASTM A240/A240M or ASTM A666, Type 304. Fabricate dowels from stainless steel, ASTM A276, Type 304.
- C. Fasteners for Stone Trim Anchors: Annealed stainless steel bolts, nuts, and washers; ASTM F593 for bolts and ASTM F594 for nuts, Alloy Group 1.

2.5 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing, where flashing is exposed or partly exposed and where indicated, complying with SMACNA's "Architectural Sheet Metal Manual" and as follows:
1. Stainless Steel: ASTM A240/A240M, Type 304, 0.016 inch thick.
 2. Fabricate continuous flashings in sections 96 inches long minimum, but not exceeding 12 feet. Provide splice plates at joints of formed, smooth metal flashing.
 3. Fabricate through-wall flashing with drip edge unless otherwise indicated. Fabricate by extending flashing 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.
 4. Metal Drip Edges: Fabricate from stainless steel. Extend at least 3 inches into wall and 1/2 inch out from wall, with outer edge bent down 30 degrees and hemmed.

- B. Flexible Flashing: For flashing unexposed to the exterior, use one of the following unless otherwise indicated:
1. Copper-Fabric Flashing: 7 oz./sq. ft. self-adhesive copper sheet bonded between two layers of glass-fiber cloth.
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Advanced Building Products Inc.
 - 2) Hohmann & Barnard, Inc.
 - 3) Wire-Bond.
 - 4) York Manufacturing, Inc.
 2. Self-Adhering, Stainless Steel Fabric Flashing: Composite, flashing product consisting of 2 mil of Type 304 stainless steel sheet, bonded to a layer of polymeric fabric with a butyl adhesive, to produce an overall thickness of 10 mil.
 - a. Products: Subject to compliance with requirements, provide the following:
 - 1) [York Manufacturing, Inc.](#); York 304.
 3. Rubberized-Asphalt Flashing: Composite flashing product consisting of a pliable, adhesive, rubberized-asphalt compound, bonded to a high-density, cross-laminated, polyethylene film to produce an overall thickness of not less than 0.040 inch.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Advanced Building Products Inc.; Strip-N-Flash.
 - 2) Carlisle Coatings & Waterproofing Inc.; CCW-705-TWF Thru-Wall Flashing.
 - 3) Fiberweb, Clark Hammerbeam Corp.; Aquafash 500.
 - 4) Heckmann Building Products, Inc.; No. 82 Rubberized-Asphalt Thru-Wall Flashing.
 - 5) Hohmann & Barnard, Inc.; Textroflash.
 - 6) Polyguard Products, Inc.; Polyguard 400.
 - 7) Williams Products, Inc.; Everlastic MF-40.
- C. Application: Unless otherwise indicated, use the following:
1. Where flashing is indicated to receive counterflashing, use metal flashing.
 2. Where flashing is indicated to be turned down at or beyond wall face, use metal flashing.
 3. Where flashing is partly exposed and is indicated to terminate at wall face, use metal flashing with a drip edge or flexible flashing with a metal drip edge.
 4. Where flashing is fully concealed, use metal flashing or flexible flashing.
- D. Solder and Sealants for Sheet Metal Flashings:
1. Solder for Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.
 2. Elastomeric Sealant: ASTM C920, chemically curing urethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

- E. Adhesives, Primers, and Seam Tapes for Flexible Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.6 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene.
- B. Weep Screed: Foundation Weep Screed shall be corrosion resistant and a minimum 0.019" (No. 26 galvanized sheet gauge, fabricated plastic or vinyl material) with a minimum vertical attachment of 3-1/2". Weep screed should have holes with a minimum diameter of 3/16" spaced at a maximum of 33" on center. Install Foundation Weep Screed per manufacturer's instructions and integrate with WRB and metal lath. Weep screed shall have a minimum of 3-1/2" attachment flange at or below the foundation plate line on exterior walls in accordance with ASTM C926. The exterior lath shall cover and terminate on the attachment flange of the weep screed. Weep holes should not be covered during installation.
- C. Expanded Metal Lath: 3.4 lb/sq. yd., self-furring, diamond-mesh lath complying with ASTM C847. Fabricate from structural-quality, zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G60.
- D. Lath Attachment Devices: Material and type required by ASTM C1063 for installations indicated.

2.7 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from stone masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone producer.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Diedrich Technologies, Inc.; a Hohmann & Barnard company.
 - b. EaCo Chem, Inc.
 - c. PROSOCO, Inc.

2.8 FABRICATION

- A. General: Fabricate stone units in sizes and shapes required to comply with requirements indicated.
- B. Select stone to produce pieces of thickness, size, and shape indicated, including details on Drawings and pattern specified in "Setting Stone Masonry" Article.
- C. Cut and drill sinkages and holes in stone for anchors and supports.
- D. Carefully inspect stone at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units before shipment.
- E. Thickness of Stone: Provide thickness indicated, but not less than the following:

1. Thickness: 1 inch plus or minus 1/4 inch.
- F. Finish exposed stone faces and edges to comply with requirements indicated for finish and to match approved samples and mockups.
1. Finish: As indicated by manufacturer's designation.

2.9 MORTAR MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
1. Do not use calcium chloride.
 2. Use portland cement-lime mortar unless otherwise indicated.
 3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
 4. Mixing Pointing Mortar: Thoroughly mix cementitious and aggregate materials together before adding water. Then mix again, adding only enough water to produce a damp, unworkable mix that will retain its form when pressed into a ball. Maintain mortar in this dampened condition for one to two hours. Add remaining water in small portions until mortar reaches required consistency. Use mortar within 30 minutes of final mixing; do not retemper or use partially hardened material.
- B. Mortar for Stone Masonry: Comply with ASTM C270, Proportion Specification.
1. Mortar for Setting Stone: Type S.
 2. Mortar for Pointing Stone: Type N.
- C. Cement-Paste Bond Coat: Mix either neat cement and water or cement, sand, and water to a consistency similar to that of thick cream.
- D. Mortar for Scratch Coat over Metal Lath: 1 part portland cement, 1/2 part lime, 5 parts loose damp sand, and enough water to produce a workable consistency.
- E. Mortar for Scratch Coat over Unit Masonry: 1 part portland cement, 1 part lime, 7 parts loose damp sand, and enough water to produce a workable consistency.
- F. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary.
1. Mortar Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive stone masonry, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone masonry.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean dirty or stained stone surfaces by removing soil, stains, and foreign materials before setting. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives.

3.3 SETTING STONE MASONRY

- A. Perform necessary field cutting and trimming as stone is set.
 - 1. Use power saws to cut stone that is fabricated with saw-cut surfaces. Cut lines straight and true, with edges eased slightly to prevent snapping.
 - 2. Use hammer and chisel to split stone that is fabricated with split surfaces. Make edges straight and true, matching similar surfaces that were shop or quarry fabricated.
- B. Sort stone before it is placed in wall to remove stone that does not comply with requirements relating to aesthetic effects, physical properties, or fabrication, or that is otherwise unsuitable for intended use.
- C. Arrange stone in pattern as indicated by manufacturer's product designation or as indicated on Drawings.
- D. Arrange stones with color and size variations uniformly dispersed for an evenly blended appearance.
- E. Set stone to comply with requirements indicated on Drawings. Install supports, fasteners, and other attachments indicated or necessary to secure stone masonry in place. Set stone accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.
- F. Maintain uniform joint widths, except for variations due to different stone sizes and where minor variations are required to maintain bond alignment if any. Lay walls with joints not less than 1/4 inch at narrowest points or more than 3/8 inch at widest points.
- G. Provide sealant joints of widths and at locations indicated.
 - 1. Keep sealant joints free of mortar and other rigid materials.
 - 2. Sealing joints are specified in Section 07 92 00 "Joint Sealants."
- H. Install embedded flashing and weep holes at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
 - 1. At stud-framed walls, extend flashing through stone masonry, up sheathing face at least 8 inches, and behind weather barrier.
 - 2. At lintels and shelf angles, extend flashing full length of angles but not less than 6 inches into masonry at each end.
 - 3. At sills, extend flashing not less than 4 inches at ends.
 - 4. At ends of head and sill flashing, turn up not less than 2 inches to form end dams.
 - 5. Extend sheet metal flashing 1/2 inch beyond masonry face at exterior, and turn flashing down to form a drip.
 - 6. Install metal drip edges beneath flexible flashing at exterior wall face. Stop flexible flashing 1/2 inch back from exterior wall face, and adhere flexible flashing to top of metal drip edge.

3.4 CONSTRUCTION TOLERANCES

- A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4 inch in 10 feet, 3/8 inch in 20 feet, or 1/2 inch in 40 feet or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4 inch in 20 feet or 1/2 inch in 40 feet or more.
- B. Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/4 inch in 20 feet or 1/2 inch in 40 feet or more.
- C. Variation of Linear Building Line: For position shown in plan, do not exceed 1/2 inch in 20 feet or 3/4 inch in 40 feet or more.
- D. Measure variation from level, plumb, and position shown in plan as a variation of the average plane of each stone face from level, plumb, or dimensioned plane.
- E. Variation in Mortar-Joint Thickness: Do not vary from joint size range indicated.
- F. Variation in Plane between Adjacent Stones: Do not exceed one-half of tolerance specified for thickness of stone.

3.5 INSTALLATION OF ADHERED STONE MASONRY VENEER

- A. Install weep screed over sheathing and behind building wrap by fastening through sheathing into framing.
- B. Install flashing over sheathing and behind building wrap and drainage material by fastening through sheathing into framing.
- C. Install lath over building wrap by fastening through sheathing into framing to comply with ASTM C1063.
- D. Install lath over unit masonry and concrete to comply with ASTM C1063.
- E. Install scratch coat over metal lath 3/8 inch thick to comply with ASTM C926.
- F. Coat backs of stone units and face of scratch coat with cement-paste bond coat, then butter both surfaces with setting mortar. Use sufficient setting mortar, so a slight excess will be forced out the edges of stone units as they are set. Tap units into place, completely filling space between units and scratch coat.
- G. Rake out joints for pointing with mortar to depth of not less than 3/4 inch before setting mortar has hardened. Rake joints to uniform depths with square bottoms and clean sides.

3.6 POINTING

- A. Prepare stone-joint surfaces for pointing with mortar by removing dust and mortar particles. Where setting mortar was removed to depths greater than surrounding areas, apply pointing mortar in layers not more than 3/8 inch deep until a uniform depth is formed.
- B. Point stone joints by placing and compacting pointing mortar in layers of not more than 3/8 inch deep. Compact each layer thoroughly, and allow it to become thumbprint hard before applying next layer.

- C. Tool joints, when pointing mortar is thumbprint hard, with a smooth jointing tool to produce the following joint profile:

1. Joint Profile: Struck joint.

3.7 ADJUSTING AND CLEANING

- A. Remove and replace stone masonry of the following description:

1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
2. Defective joints.
3. Stone masonry not matching approved samples and mockups.
4. Stone masonry not complying with other requirements indicated.

- B. Replace in a manner that results in stone masonry matching approved samples and mockups, complying with other requirements, and showing no evidence of replacement.

- C. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints.

- D. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:

1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
2. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone masonry.
3. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.
4. Wet wall surfaces with water before applying cleaner; remove cleaner promptly by rinsing thoroughly with clear water.
5. Clean stone masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.

3.8 EXCESS MATERIALS AND WASTE

- A. Excess Stone: Stack excess stone where directed by Owner for Owner's use.

- B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as described above, and other waste, and legally dispose of off Owner's property.

END OF SECTION 04 43 13.16

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SECTION 04 72 00

CAST STONE MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Trim units.
2. Mortar materials.
3. Accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. For cast stone units, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Shop Drawings: Show fabrication and installation details for cast stone units. Include dimensions, details of reinforcement and anchorages if any, and indication of finished faces.

- C. Samples for Initial Selection: For colored mortar.

- D. Samples for Verification:

1. For each color and texture of cast stone required, 4 inches square in size.
2. For each trim shape required, 4 inches in length.
3. For colored mortar, make Samples using same sand and mortar ingredients to be used on Project.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and testing agency.

1. Include copies of material test reports, indicating compliance of cast stone with ASTM C1364.

- B. Material Test Reports: For each mix required to produce cast stone, based on testing according to ASTM C1364.

1. Provide test reports based on testing within previous six months.

1.5 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** A qualified manufacturer of cast stone units similar to those indicated for this Project, that has sufficient production capacity to manufacture required units, and is a plant certified by the Cast Stone Institute or by the Architectural Precast Association.
- B. **Testing Agency Qualifications:** Qualified according to ASTM E329 for testing indicated.
- C. **Mockups:** Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Coordinate delivery of cast stone to avoid delaying the Work and to minimize the need for on-site storage.
- B. Pack, handle, and ship cast stone units in suitable packs or pallets.
 - 1. Lift with wide-belt slings; do not use wire rope or ropes that might cause staining. Move cast stone units if required, using dollies with wood supports.
 - 2. Store cast stone units on wood skids or pallets with nonstaining, waterproof covers, securely tied. Arrange to distribute weight evenly and to prevent damage to units. Ventilate under covers to prevent condensation.
- C. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- D. Store mortar aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

1.7 PROJECT CONDITIONS

- A. **Cold-Weather Requirements:** Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Comply with cold-weather construction requirements in TMS 602.
 - 1. **Cold-Weather Cleaning:** Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until cast stone has dried, but no fewer than seven days after completing cleaning.
- B. **Hot-Weather Requirements:** Comply with hot-weather construction requirements in TMS 602.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. **Source Limitations for Cast Stone:** Obtain cast stone units from single source from single manufacturer.

- B. Source Limitations for Mortar Materials: Obtain mortar ingredients of a uniform quality, including color, from one manufacturer for each cementitious component and from one source or producer for each aggregate.

2.2 CAST STONE MATERIALS

- A. General: Comply with ASTM C1364.
- B. Portland Cement: ASTM C150/C150M, Type I or Type III, containing not more than 0.60 percent total alkali when tested according to ASTM C114. Provide natural color or white cement as required to produce cast stone color indicated.
- C. Coarse Aggregates: Granite, quartz, or limestone complying with ASTM C33/C33M; gradation and colors as needed to produce required cast stone textures and colors.
- D. Fine Aggregates: Natural sand or crushed stone complying with ASTM C33/C33M, gradation and colors as needed to produce required cast stone textures and colors.
- E. Color Pigment: ASTM C979/C979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
- F. Admixtures: Use only admixtures specified or approved in writing by Architect.
 - 1. Do not use admixtures that contain more than 0.1 percent water-soluble chloride ions by mass of cementitious materials. Do not use admixtures containing calcium chloride.
 - 2. Use only admixtures that are certified by manufacturer to be compatible with cement and other admixtures used.
 - 3. Air-Entraining Admixture: ASTM C260/C260M. Add to mixes for units exposed to the exterior at manufacturer's prescribed rate to result in an air content of 4 to 6 percent, except do not add to zero-slump concrete mixes.
 - 4. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 5. Water-Reducing, Retarding Admixture: ASTM C494/C494M, Type D.
 - 6. Water-Reducing, Accelerating Admixture: ASTM C494/C494M, Type E.
- G. Reinforcement:
 - 1. Deformed steel bars complying with ASTM A615/A615M, Grade 40. Use galvanized or epoxy-coated reinforcement when covered with less than 1-1/2 inches of cast stone material.
 - a. Epoxy Coating: ASTM A775/A775M.
 - b. Galvanized Coating: ASTM A767/A767M.
- H. Embedded Anchors and Other Inserts: Fabricated from stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666, Type 304.

2.3 CAST STONE UNITS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. Cast Stone Systems, Inc.

2. Continental Cast Stone East by Russell.
3. Hoyle Stone Products.
4. D. C. Kerckhoff.
5. Nelson Precast.
6. Reading Rock.
7. Stafford Stone Works, LLC.
8. Sun Precast Company.

B. Cast Stone Units: Comply with ASTM C1364.

1. Units shall be manufactured using the manufacturer's selected method.
2. Units shall be resistant to freezing and thawing as determined by laboratory testing according to ASTM C666/C666M, Procedure A, as modified by ASTM C1364.
3. Provide Trim units including items as indicated on Drawings.

C. Fabricate units with sharp arris and accurately reproduced details, with indicated texture on all exposed surfaces unless otherwise indicated.

1. Slope exposed horizontal surfaces 1:12 to drain unless otherwise indicated.
2. Provide raised fillets at backs of sills and at ends indicated to be built into jambs.
3. Provide drips on projecting elements unless otherwise indicated.

D. Fabrication Tolerances:

1. Variation in Cross Section: Do not vary from indicated dimensions by more than 1/8 inch.
2. Variation in Length: Do not vary from indicated dimensions by more than 1/360 of the length of unit or 1/8 inch, whichever is greater, but in no case by more than 1/4 inch.
3. Warp, Bow, and Twist: Not to exceed 1/360 of the length of unit or 1/8 inch, whichever is greater.
4. Location of Grooves, False Joints, Holes, Anchorages, and Similar Features: Do not vary from indicated position by more than 1/8 inch on formed surfaces of units and 3/8 inch on unformed surfaces.

E. Cure Units as Follows:

1. Cure units in enclosed, moist curing room at 95 percent relative humidity and temperature of 100 deg F for 12 hours or 70 deg F for 16 hours.
2. Keep units damp and continue curing to comply with one of the following:
 - a. No fewer than five days at mean daily temperature of 70 deg F or above.
 - b. No fewer than six days at mean daily temperature of 60 deg F or above.
 - c. No fewer than seven days at mean daily temperature of 50 deg F or above.
 - d. No fewer than eight days at mean daily temperature of 45 deg F or above.

F. Acid etch units after curing to remove cement film from surfaces to be exposed to view.

G. Colors and Textures: Match stone veneer units specified in Section 04 43 13.16 "Adhered Stone Masonry Veneer."

2.4 MORTAR MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.

- B. Hydrated Lime: ASTM C207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Colored Cement Products: Packaged blend made from portland cement and hydrated lime and mortar pigments, all complying with specified requirements, and containing no other ingredients.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Argos USA LLC; Eaglebond Portland Lime Cement.
 - b. Holcim (US) Inc.; Rainbow Mortamix Custom Color Cement/Lime.
 - c. Lehigh Hanson; HeidelbergCement Group; Lehigh Custom Color Portland/Lime Cement.
 - 2. Formulate blend as required to produce color indicated or, if not indicated, as selected from manufacturer's standard colors.
 - 3. Pigments shall not exceed 10 percent of portland cement by weight.
- E. Aggregate for Mortar: ASTM C144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand or crushed stone.
 - 2. For joints less than 1/4 inch thick, use aggregate graded with 100 percent passing the No. 16 sieve.
 - 3. White-Mortar Aggregates: Natural white sand or crushed white stone.
 - 4. Colored Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- F. Water: Potable.

2.5 ACCESSORIES

- A. Anchors: Type and size indicated, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.
- B. Dowels: 1/2-inch-diameter round bars, fabricated from Type 304 stainless steel complying with ASTM A240/A240M, ASTM A276/A276M, or ASTM A666.

2.6 MORTAR MIXES

- A. Do not use admixtures including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use portland cement-lime mortar unless otherwise indicated.
- B. Comply with ASTM C270, Proportion Specification.
 - 1. For setting mortar, use Type S.
 - 2. For pointing mortar, use Type N.

- C. Colored-Aggregate Mortar: Produce required mortar color by using colored aggregates and natural color or white cement as necessary to produce required mortar color.
 - 1. Mortar Color: As selected by Architect from manufacturer's full range.
 - 2. Application: Use colored-aggregate mortar for exposed mortar joints.

2.7 SOURCE QUALITY CONTROL

- A. Engage a qualified independent testing agency to sample and test cast stone units according to ASTM C1364.
 - 1. Include one test for resistance to freezing and thawing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SETTING CAST STONE IN MORTAR

- A. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.
 - 1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
 - 2. Coordinate installation of cast stone with installation of flashing specified in other Sections.
- B. Wet joint surfaces thoroughly before applying mortar or setting in mortar.
- C. Set units in full bed of mortar with full head joints unless otherwise indicated.
 - 1. Set units with joints 1/4 to 3/8 inch wide unless otherwise indicated.
 - 2. Build anchors and ties into mortar joints as units are set.
 - 3. Fill dowel holes and anchor slots with mortar.
 - 4. Fill collar joints solid as units are set.
 - 5. Build concealed flashing into mortar joints as units are set.
 - 6. Keep head joints in copings and between other units with exposed horizontal surfaces open to receive sealant.
- D. Rake out joints for pointing with mortar to depths of not less than 3/4 inch. Rake joints to uniform depths with square bottoms and clean sides. Scrub faces of units to remove excess mortar as joints are raked.
- E. Point mortar joints by placing and compacting mortar in layers not greater than 3/8 inch. Compact each layer thoroughly and allow it to become thumbprint hard before applying next layer.

- F. Tool exposed joints slightly concave when thumbprint hard. Use a smooth plastic jointer larger than joint thickness.
- G. Rake out joints for pointing with sealant to depths of not less than 3/4 inch. Scrub faces of units to remove excess mortar as joints are raked.
- H. Point joints with sealant to comply with applicable requirements in Section 07 92 00 "Joint Sealants."
 - 1. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.
- I. Provide sealant joints at head joints of copings and other horizontal surfaces; at expansion, control, and pressure-relieving joints; and at locations indicated.
 - 1. Keep joints free of mortar and other rigid materials.
 - 2. Build in compressible foam-plastic joint fillers where indicated.
 - 3. Form joint of width indicated, but not less than 3/8 inch.
 - 4. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.
 - 5. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 07 92 00 "Joint Sealants."

3.3 SETTING ANCHORED CAST STONE WITH SEALANT-FILLED JOINTS

- A. Set cast stone as indicated on Drawings. Set units accurately in locations indicated, with edges and faces aligned according to established relationships and indicated tolerances.
 - 1. Install anchors, supports, fasteners, and other attachments indicated or necessary to secure units in place.
 - 2. Shim and adjust anchors, supports, and accessories to set cast stone in locations indicated with uniform joints.
- B. Keep cavities open where unfilled space is indicated between back of cast stone units and backup wall; do not fill cavities with mortar or grout.
- C. Fill anchor holes with sealant.
 - 1. Where dowel holes occur at pressure-relieving joints, provide compressible material at ends of dowels.
- D. Set cast stone supported on clip or continuous angles on resilient setting shims. Use material of thickness required to maintain uniform joint widths. Hold shims back from face of cast stone a distance at least equal to width of joint.
- E. Keep joints free of mortar and other rigid materials. Remove temporary shims and spacers from joints after anchors and supports are secured in place and cast stone units are anchored. Do not begin sealant installation until temporary shims and spacers are removed.
 - 1. Form open joint of width indicated, but not less than 3/8 inch.
- F. Prime cast stone surfaces to receive sealant and install compressible backer rod in joints before applying sealant unless otherwise indicated.

- G. Prepare and apply sealant of type and at locations indicated to comply with applicable requirements in Section 07 92 00 "Joint Sealants."

3.4 INSTALLATION TOLERANCES

- A. Variation from Plumb: Do not exceed 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2 inch maximum.
- B. Variation from Level: Do not exceed 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2 inch maximum.
- C. Variation in Joint Width: Do not vary joint thickness more than 1/8 inch in 36 inches or one-fourth of nominal joint width, whichever is less.
- D. Variation in Plane between Adjacent Surfaces (Lipping): Do not vary from flush alignment with adjacent units or adjacent surfaces indicated to be flush with units by more than 1/16 inch, except where variation is due to warpage of units within tolerances specified.

3.5 ADJUSTING AND CLEANING

- A. Remove and replace stained and otherwise damaged units and units not matching approved Samples. Cast stone may be repaired if methods and results are approved by Architect.
- B. Replace units in a manner that results in cast stone matching approved Samples, complying with other requirements, and showing no evidence of replacement.
- C. In-Progress Cleaning: Clean cast stone as work progresses.
 - 1. Remove mortar fins and smears before tooling joints.
 - 2. Remove excess sealant immediately, including spills, smears, and spatter.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed cast stone as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample; leave one sample uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of cast stone.
 - 3. Protect adjacent surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet surfaces with water before applying cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
 - 5. Clean cast stone by methods described in Cast Stone Institute Technical Bulletin #39.

END OF SECTION 04 72 00

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 05 - METALS

05 05 19	POST-INSTALLED ANCHORS IN CONCRETE & MASONRY
05 12 00	STRUCTURAL STEEL FRAMING
05 21 10	COMPOSITE STEEL JOIST (HAMBRO)
05 31 23	STEEL ROOF DECKING
05 40 00	COLD-FORMED METAL FRAMING
05 50 00	METAL FABRICATIONS
05 51 13	METAL PAN STAIRS
05 52 13	PIPE AND TUBE RAILINGS

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SECTION 05 05 19

POST-INSTALLED ANCHORS IN CONCRETE & MASONRY

PART 1 – GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Furnish all work, labor, materials, equipment and supervision necessary to provide and install anchors in previously poured concrete and in masonry as indicated on Structural Drawings, as specified herein, or as otherwise required to anchor or support materials and equipment from structure.

B. Work Not Included:

1. Anchors, embeds, and other materials placed prior to concrete pour, cast into concrete or set in masonry walls – See Section Divisions 3, 4, and 5.
2. Concrete reinforcing steel – See Section 03 20 00.

C. Related Sections:

1. Division 3 Concrete Sections
2. Division 4 Masonry Sections
3. Division 5 Metals Section

1.2 QUALITY ASSURANCE

A. Applicable Specifications: Latest edition of the following documents shall become part of this specification as if written herein. Whenever requirements conflict, the more stringent shall govern.

1. ACI 318
2. Mechanical Anchors: ACI 355.2, "Qualification of Post-Installed Mechanical Anchors in Concrete".
3. Adhesive Anchors: ACI 355.4, "Qualification of Post-Installed Adhesive Anchors in Concrete".
4. Expansion and Screw Anchors (Concrete): ICC-ES AC193.
5. Expansion Anchors (Masonry) ICC-ES AC01.
6. Screw Anchors (Masonry) ICC-ES AC106.
7. Adhesive Anchors: ACI 355.4, "Qualification of Post-Installed Adhesive Anchors in Concrete".
8. Adhesive Anchors (Concrete) ICC-ES AC308.
9. Adhesive Anchors (Masonry) ICC-ES AC58.
10. Manufacturer's published specifications and installation requirements.

B. References:

1. CRSI (Concrete Reinforcing Steel Institute) CTN-M-3-11: Suggested General Drawing Notes for Adhesive Anchors.
2. CAMA (Concrete Anchor Manufacturers Association): Special Inspection Guidelines for Post-Installed Anchors.

3. ACI-CRSI CP80-12 Installer Workbook: Certification Program for Adhesive Anchor Installer.
- D. All post-installed anchors in concrete shall have current published ICC-ES Evaluation Report indicating the anchor is approved for installation in cracked concrete as required by ACI 355.4.
- E. Where material or equipment must be supported from the structure, the installer of the material of equipment support shall be responsible for supplying the anchors and meeting the requirements of this specification unless specifically noted otherwise on the plans.
- F. Installer Qualification: Adhesive Anchor Installer shall meet the requirements of paragraphs 1.2.B.2 & 1.2.B.3 above.
 1. Drilled-in anchors shall be installed by a contractor with at least three years of experience performing similar installations.
 2. Installation of adhesive anchors horizontally or upwardly inclined to support sustained tension loads (as determined by the Engineer) shall be performed by personnel certified by the ACI-CRSI "Adhesive Anchor Installer Certification Program".
 3. Installer Training: Conduct a thorough training with the manufacturer or the manufacturer's representative for the contractor on the project. Training to consist of a review of the complete installation process for drilled-in anchors, to include but not limited to:
 - a. Hole drilling procedure
 - b. Hole preparation and cleaning technique
 - c. Adhesive injection technique and dispenser training / maintenance
 - d. Proof loading / torquing
- G. Field and laboratory testing of all post installed anchors shall comply with the testing requirements of Section 01 40 00, Quality Control. Perform all specified inspections and tests in accordance with ACI 301 and IBC. Testing Agency shall meet the requirements of ASTM E 329. Special inspection shall be in accordance with a current published ICC-ES Evaluation Report.
- H. Certifications: Unless otherwise authorized by the Engineer, all anchors shall have an ICC ES Evaluation Report indicating conformance with current applicable ICC ES Acceptance Criteria.

1.3 SUBMITTALS

- A. An ICC-ES Evaluation Service Report shall be submitted for anchors that will be considered for use on this project.
 1. Anchors specifically referenced by the structural plans or specifications shall have the Evaluation Service Reports provided with a cover letter indicating the applicable notes and/or details for each anchor (unless noted otherwise).
 2. Anchors not specifically referenced by the structural plans or specifications shall have the Evaluation Service Reports submitted with the associated justification.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 1. Structural design criteria.
 2. Product specifications with recommended design values and physical characteristics for epoxy dowels, expansion and undercut anchors.
 3. Samples: Representative length and diameters of each type anchor shown on the Drawings.
 4. Quality Assurance Submittals:

- a. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - b. Certificates: ICC ES Evaluation Reports
 5. Preparation instruction and recommendations.
 6. Manufacturer's installation instructions.
 7. Storage and handling requirements and recommendations.
 8. Installation Qualifications & Procedures: Submit installer qualifications as stated in Section 12.E. Submit a letter of procedure stating method of drilling, the product proposed for use, the complete installation procedure, manufacturer training date, and a list of the personnel to be trained on anchor installation.
 - C. Preliminary proposals for substitutions to specified anchors must be submitted to the Architect/Engineer in a timely fashion so that the project is not delayed.
 1. The Engineer or Architect may reject proposed substitutions for aesthetics, interference, inappropriate materials, fire ratings, or any other reason.
 2. If the preliminary proposal for substitutions is approved, the contractor must make a final substitution submittal in conformance with the "SUBSTITUTIONS" section included in this specification.
 - D. Calculations shall be submitted for all anchors and anchor groups that are shown but are not completely detailed on the structural drawings. Calculations shall be reviewed for general conformance with the design intent and shall be submitted to the Engineer for record only. Calculations must be submitted to the State when required for a component submittal.
 1. Calculations are required to be submitted:
 - a. Where design loads are shown on structural documents in lieu of completely detailed anchor information.
 - b. When a proprietary anchor is shown on the plans and a different anchor is substituted.
 2. Calculations are not required to be submitted to the Architect:
 - a. Where anchor size, length or embed length, spacing, and a proprietary trade name are specifically shown on the structural plans.
 - b. For anchors used by other trades but are not shown on the structural plans, including hangers for piping, mechanical equipment, electrical raceways, etc. the equipment supplier remains responsible for the proper anchor design.
 - E. Installer Certifications
 1. Submit record of ACI-CRSI "Adhesive Anchor Installer Certification Program" certifications for all proposed personnel who will be installing adhesive anchors in a horizontally or upwardly inclined position, which support sustained tension loads.
 - F. Closeout Submittals: Submit the following:
 1. Record Documents: Project record documents for installed materials in accordance with Division a Closeout Submittals Section.
- 1.4 DELIVERY, STORAGE AND HANDLING
- A. Store anchors in accordance with manufacturer's recommendations. For adhesive anchors, consider temperature, exposure to sunlight, and shelf life.

1.5 SUBSTITUTIONS

- A. Anchors included in this specification, but not shown in a specific detail, may be considered a substitution anchor for that detail. The contractor must submit a preliminary proposal for substitution as noted in the "SUBMITTALS" section of this specification. The structural capacity of the substitute anchor or anchor group must be no less than the capacity of the original anchors or the design load when shown on the plans.
- B. Other post-installed anchors will be considered in lieu of specified anchors provided they meet the requirements of both the "QUALITY ASSURANCE" section and the "SUBMITTALS" section of this specification. Submittals must be approved in writing by Engineer prior to installation.
- C. Cast-in anchorage in lieu of post-installed anchors will be considered provided that the anchors meet the requirements of the latest edition of ACI 318, Appendix D and calculations are prepared in conformance with the "SUBMITTALS" sections of this section.
- D. It is the contractor's responsibility to obtain preliminary approval for substitutions from the Architect and Engineer in a timely fashion in conformance with the "SUBMITTALS" section of this specification.
- E. The contractor proposing substitutions shall be responsible for all additional costs incurred related to that substitution, including those of other trades and design professionals. The contractor proposing substitutions shall be responsible for coordination with all other trades.

PART 2 – PRODUCTS

2.0 GENERAL

- A. Post installed anchors including adhesive, anchor and installation equipment must be furnished as a complete system.

2.1 MATERIALS

A. Fasteners and Anchors

- 1. Bolts and Studs: ASTM A307; ASTM A449 where "high strength" is indicated on the Drawings.
- 2. Carbon and Alloy Steel Nuts: ASTM A563.
- 3. Carbon Steel Washers: ASTM F436.
- 4. Carbon Steel Threaded Rod: ASTM A36; or ASTM A193 Grade B7; or ISO 898 Class 5.8.
- 5. Wedge Anchors: ASTM A510; or ASTM A108.
- 6. Stainless Steel Bolts, Hex Cap Screws, and Studs: ASTM F593.
- 7. Stainless Steel Nuts: ASTM F594
- 8. Zinc Plating: ASTM B633.
- 9. Hot-Dip Galvanizing: ASTM A153.
- 10. Reinforcing Dowels: ASTM A615.

- F. Interior Use (unless noted otherwise): Provide carbon steel anchors with zinc plating in accordance with ASTM B633 for use in conditioned environments free from potential moisture. For interior uses where anchor is in contact with preservative treated wood anchors must be mechanically galvanized, hot dip galvanized or 300 series stainless steel.

- G. Exposed Use: Provide stainless steel anchors using Series 300 stainless steel bolts with Series 304/316 or Type 18-8 stainless steel nuts and washers unless noted otherwise for the following conditions:

1. Exterior environments.
2. Potentially moist environments including exterior wall construction.
3. Corrosive environments including pools and pool equipment rooms.
4. All exterior wall cladding support and anchorage.
5. Where anchorage is in contact with preservative treated wood.
6. Any other location or detail that is noted on the plans.

2.2 PRODUCTS AND MANUFACTURERS FOR USE IN CRACKED CONCRETE

A. Expansion Anchors and Wedge Anchors:

1. DeWALT / Powers Fasteners Power-Stud+ SD1
2. DeWALT / Powers Fasteners Power-Stud+ SD2
3. DeWALT / Powers Fasteners- Bolt
4. Hilti Kwik Bolt TZ
5. Hilti HSL-3
6. Hilti Kwik Bolt 3 (Uncracked Concrete Only)

B. Screw Anchors:

1. DeWALT Screw-Bolt +
2. DeWALT / Powers Fasteners Wedge-Bolt +
3. DeWALT / Powers Fasteners Snake+
4. DeWALT / Powers Fasteners Vertigo +
5. Hilti Kwik-Hus EZ
6. Hilti Kwik-Hus EZ-1
7. Hilti Kwik-Hus – (Uncracked Concrete Only)

C. Undercut Anchors:

1. DeWALT / Powers Fasteners Atomic+Undercut
2. Hilti HDA
3. Approved Equal

D. Adhesive Injection Systems for Anchoring Bolts or Reinforcing Steel into Concrete (Hammer drilled applications only, unless otherwise noted):

1. DEWALT / Powers Fasteners PE1000+ Adhesive
2. DeWALT / Powers Fasteners AC100+ Gold Adhesive
3. DeWALT / Powers Fasteners Pure110+” Adhesive
4. DeWALT / Powers AC200 + Adhesive
5. Hilti HIT-RE 500-SD Adhesive
6. Hilti HIT-RE 500 V3 Adhesive (Diamond core applications)
7. Hilti HIT-HY 200-R Adhesive
8. Hilti HIT-HY 100 Adhesive (Uncracked Concrete Only)
9. Approved Equal

2.3 PRODUCTS AND MANUFACTURERS FOR USE IN GROUTED MASONRY

A. Expansion Anchors and Wedge Anchors:

1. Powers Fasteners Power-Stud + SD1
2. Hilti Kwik Bolt 3
3. Approved Equal

B. Screw Anchors:

1. DeWALT / Powers Fasteners Wedge-Bolt+
2. Hilti Kwik – HUS EZ
3. Hilti Kwik-HUS
4. Approved Equal

C. Adhesive Injection Systems for Anchoring bolts, including use with Screen Tubes:

1. DeWALT / Powers Fasteners AC100+ gold™ Adhesive
2. DeWALT / Powers Fasteners Oure110+™ Adhesive
3. Hilti HIT ICE Adhesive
4. Hilti HIT HY-270 Adhesive
 - a. Use composite mesh sleeves in hollow masonry and brick material.
5. Approved equal

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Identify location of embedded items such as reinforcing steel, stressing tendons, conduit, heating tubes, etc. prior to drilling holes. Coordinate with respective trades if any apparent conflict exists. Exercise care in coring and drilling to avoid damaging any existing embedded items. If embedded items are encountered, stop drilling and contact Engineer immediately. Any offsets or relocations of anchors must be approved by Engineer. This contractor is responsible for the cost of any required repairs including engineering costs.
- B. Install all post installed anchors in strict accordance with Manufacturer's Published Installation Instructions (MPII).
- C. Drill holes of proper diameter and depth in accordance with manufacturer's published design information for that specific anchor. Use only equipment approved by anchor manufacturer. All holes shall be perpendicular to the concrete surface unless shown otherwise on structural plans.
 1. Holes for adhesive anchors must be drilled using only hammer drills. Core drilling holes for adhesive anchors is prohibited.
 2. Do not drill holes until base material has cured for a minimum of 21 days.
- D. Clean out holes, properly prepare substrate, and install anchors in accordance with manufacturer's instructions. Proper tools must be on job site.
- E. Expansion Anchors, Wedge Anchors, Screw Anchors and Undercut Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in part to be fastened. Set anchors to manufacturer's recommended torque, using

a torque wrench. Following attainment of 10% of the specified torque, 100% of the specified torque shall be reached within 7 or fewer complete turns of the nut. If the specified torque is not achieved within the required number of turns, the anchor shall be removed and replaced unless otherwise directed by the engineer.

- F. For adhesive anchors, maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer. Verify that base material temperature is within manufacturer limits. Do not install adhesive anchors if any criteria do not fall within manufacturer's limits. Ensure that bore holes and anchors are free of dust, standing water, ice, debris, grease, oil, dirt and other foreign matter.
 - 1. Dispose of initial mixture of hardener and resin pushed through the mixing nozzle. Mixture shall have a uniform color when installed.
 - 2. Do not reuse the mixing nozzle from a previous cartridge.
 - 3. Adhesive shall be injected from the bottom of the hole and the nozzle withdrawn as filling progresses. Spare adhesive must be visible all around the mouth of the hole following installation of the anchor.
- G. Protect anchors with approved fire-resistive materials, or spray-on fireproofing when anchors are attached to fire-resistive construction. Refer to ICC-ES Evaluation Service Reports (ESR's) Conditions of Use for applicability.

3.2 REPAIR OF DEFECTIVE WORK

- A. Remove and replace misplaced or malfunctioning anchors. Fill empty anchor holes and patch failed anchor locations with high-strength non-shrink, nonmetallic grout. Anchors that fail to meet proof load or installation torque requirements shall be regarded as malfunctioning.

3.3 FIELD QUALITY CONTROL

- A. Unless otherwise specified in the contract documents, all post-installed anchors shall be inspected and tested per the following schedule.
 - 1. All down hole and non-adhesive inclined and horizontal anchors: 5% of each type of anchor.
 - 2. Inclined and horizontal adhesive anchors: 25% of each type of anchor.
 - 3. All anchor types supporting sustained loads and all overhead anchors: 100% of each type of anchor.
- B. Inspection: Inspect all anchor types to assure proper material are utilized as shown on the Contract Drawings or as approved via the shop drawing process. Post-installed anchor installation shall be completed per the MPII and the requirements of this specification.
 - 1. Adhesive anchors installed in horizontal or upwardly inclined orientations to resist sustained tension loads shall be continuously inspected during installation by an inspector specially approved for that purpose by the building official.
- C. Testing: Each type and size of drilled-in anchor shall be proof loaded by the independent testing laboratory. Adhesive anchors and capsule anchors shall not be torque tested unless otherwise directed by the Engineer.
 - 1. Tension testing should be performed in accordance with ASTM E488.
 - 2. Torque shall be applied with a calibrated torque wrench.

3. Proof loads for adhesive anchors shall be applied with a calibrated hydraulic ram. Proof load shall be 200% of the allowable service load or 80% of the rod steel yield strength – whichever is less.
 4. Displacement of adhesive and capsule anchors at proof load shall not exceed $D/10$, where D is the nominal anchor diameter.
 5. If any more than 10% of the tested anchors fail to achieve the specified torque or proof load within the limits as defined on the Drawings, all anchors of the same diameter and type as the failed anchor shall be tested, unless otherwise instructed by the Engineer.
- 3.4 CONTRACTOR'S RESPONSIBILITY
- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
 - B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project, and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 05 0519

SECTION 05 12 00

STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Structural Metals.

1.3 RELATED WORK

- A. Remaining metal work covered by Division 5.
- B. The anchor bolts and leveling plates for the project are furnished and installed under other contracts. Coordinate all details of structural metal fabrication and erection with the work of other contractors.
- C. Concrete construction for the project is included in other subcontracts. Coordinate all details of structural metal fabrication and erection with the work of other Contractors.

1.4 QUALITY ASSURANCE

- A. Fabricator/Erector's Qualifications: Must have facilities and personnel sufficient to fabricate and erect structural metal framing as indicated on drawings; must have minimum of 5 years experience and be able, upon request, to show framing of similar size materials and scope of work of this contract; must be approved by the Structural Engineer.
- B. Material: Provide only structural steel certified as conforming with specified requirements and fabricated especially to the requirements of this contract.
- C. Tolerances: Unless otherwise noted on drawings or specified, provide structural steel work in accordance with the following minimum tolerances:
 - 1. Fabrication Tolerances: In accordance with requirements of AISC Specifications.
 - 2. Erection Tolerances: Maximum deviation from plumb level and alignment shall not exceed AISC Specifications.
- D. Inspection: All tests and inspections required for shop and field quality control shall be performed by an inspection agency.
- E. Welders: Certified and qualified in accordance with requirements of the American Welding Society, for the particular materials and methods being used. The welder's certification papers shall be available on the first trip by the inspector.
- F. Welding Materials and Methods: For fabrication and erection shall be in accordance with the requirements of the American Welding Society.

G. Codes and Standards: Comply with provisions of following, except as otherwise indicated:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges".
2. AISC "Specifications for the Design, Fabrications, and Erection of Structural Steel for Buildings" includes "Commentary" and Supplements thereto as issued.
3. AISC "Specifications for Architecturally Exposed Structural Steel".
4. AISC "Specifications for Structural Joints using ASTM A-325 or A-490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
5. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel".
6. ASTM A-6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
7. AISC 341 "Seismic Provisions for Structural Steel Building, including Supplement No. 1".
8. PCI: MNL-120, "PCI Design Handbook - Precast and Prestressed Concrete". Comply with building code requirements, which are more stringent than the above.
9. ASTM C-150 "Portland Cement".
10. UFC 4-010-01 Unified Facilities Criteria (UFC), DoD Minimum Antiterrorism Standards for Buildings.
11. UFC 4-023 Unified Facilities Criteria (UFC), Design of Buildings to Resist Progressive Collapse.

1.5 REFERENCES

- A. American Society for Testing and Materials (ASTM).
- B. American Institute of Steel Construction (AISC): "Manual of Steel Construction".
- C. Steel Structures Paint Council (SSPC): "Steel Structures Paint Manual, Volume 1 and Volume 2, Systems and Specifications, by Steel Structures Painting Council.

1.6 SUBMITTALS

- A. Shop Drawings: Submit prior to commencing any fabrication of structural metal; show dimensions, connections with adjoining materials and construction, finishes, welds, bolts, and fasteners, anchoring all fabrication or erection accessories required; show field welds, cuts, holes and fasteners; verify all dimensions and correlate with adjoining construction and materials; indicate size, type and grade of all members.
 1. Prior to the commencement of steel erection, the erector shall carefully inspect all anchor bolts and leveling plates installed under other subcontracts and shall notify the general contractor of defects. If the anchor bolt, leveling plate and base plate placement are acceptable to him he shall notify the general contractor of the same and proceed with erection of the structural steel.
 2. The approval of the shop drawings is limited to design intent only. No responsibility for a detailed check of member length, size, spacing, or similar detail information is assumed by the Structural Engineer by virtue of such approval.
- B. Shop drawings shall not be a reproduction of the contract drawings. Corrections or revisions to the shop drawings required to coordinate them with the contract documents and other shop drawings shall be made at no additional cost. **Please note that the Contract Documents in CAD format will not be made available to the contractor for their use in the preparation of the shop drawings, unless a release is signed, and a fee is paid for each cad file requested.**

- C. All steel connection design shall be completed by a design professional hired by the contractor, and satisfy the load requirements specified in the contract documents. Prior to submission of steel shop drawings, the steel fabricator shall submit sample calculations (prepared by a registered structural engineer) for all typical beam to beam and beam to column connections, which are proposed to be used on this project. After these typical calculations and connections are accepted, the fabricator shall prepare and submit the shop drawings for this project. Only these typical sample calculations are required to be sealed by a registered structural engineer. The material necessary for the fabrication of all connections shall be the responsibility of the contractor.
- D. Submit for review, before installation, information on the studs (shear connectors) and equipment as follows:
 - 1. The name of the manufacturer.
 - 2. A detailed description of the stud, or shield and welding equipment.
 - 3. A certification from the manufacturer that the stud is qualified as specified in AWS D1.1.
 - 4. A copy of the qualification test report as certified by his testing agency.
- E. Mill test reports - see paragraph 3.4.A.
- F. LEED v4 Submittals: Comply with Section 01 81 13
 - 1. MR Credit: BPDO – Environmental Product Declarations
 - a. For steel: Industry-wide or product-specific EPD.
 - 2. MR Credit: BPDO – Sourcing of Raw Materials
 - a. For recycled content steel: Documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include material cost value.
 - b. For regionally sourced steel: Documentation indicating location of extraction, manufacture, purchase of primary raw materials. Include material cost value.

1.7 PRODUCT HANDLING AND STORAGE

- A. Deliver to the project site materials to be installed by other contractors in time to be installed before the start of work by trade affected. Specifically, anchor bolts and other anchorage devices, which are embedded in cast-in-place concrete or masonry construction. Provide setting drawings, templates, and directions for the installation of the anchor bolts and other devices.
- B. Store all steel in such manner as to prevent distortion to the members and injury to the paint, and supported free from the ground and kept clean. Where shop coat becomes damaged during handling, touch up paint. In the event that the shop coat of paint is damaged or rusted due to storage, repaint steel prior to erection with same paint used as shop coat.

PART 2 - PRODUCTS

2.0 LEED v4 REQUIREMENTS

- A. Recycled Content of Structural Steel: Provide structural steel products with an average recycled content of steel materials so post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 50 percent.
- B. Regional Materials: Provide minimum 25 percent of steel manufactured and of primary raw materials extracted or recovered within 100 mile radius of Project Site.

2.1 MATERIALS

- A. All structural steel including wide flange shapes, tubes, pipes, angles, bars, plates, channels, bolts, studs, etc. shall be from stock of domestic origin, and shall meet all of the requirements of the "Maryland Buy American Steel Act".
- B. Plates, Angles, Bars and rolled S, M, and HP shapes: ASTM A-36.
- C. Rolled Wide Flange Channel Shapes: ASTM A-992, Grade 50.
- D. Rolled S, M, HP, ASTM A-572, Grade 50; or ASTM A-588, Grade 50.
- E. Cold-Formed Steel Tubing: ASTM A-500, Grade B.
- F. Hot-Formed Steel Tubing: ASTM A-501.
- G. Steel Pipe: ASTM A-53, Type E or S, Grade B.
- H. Anchor Bolts:
 - 1. ASTM F-1554 (hooked, headed, and threaded & nutted anchor rods including weldability supplement S1 conforming to grades 36, 55, and 105).
- I. Bolts & Nuts:
 - 1. High-Strength Bolts, Nuts, and Washers: ASTM A-325 and A-490 bolts, with ASTM A-563 nuts and ASTM F-436 washers.
 - 2. Tension Control Fastening System (conforming to ASTM F 1852) utilizing ASTM A-325 and A-490 tension control bolts, nuts, and washers as manufactured by Unytite or approved equal.
- J. Electrodes for Welding: Comply with AWS Code.
 - 1. Covered mild steel electrodes complying with AWS Code and ASTM A-233, Series E70. Use E70 Series, Grade SAW-1 for welding ASTM A-36 steel. Use E70 Low Hydrogen Series, Grade SAW-2 for welding ASTM A-992, Grade 50 steel.
 - 2. All electrodes having low hydrogen type coverings shall be dried for at least 2 hours between 450 degrees F. and 500 degrees F. before they are used. Electrodes may be stored immediately after drying in storage ovens held at a temperature of at least 250 degrees F. Electrodes that are not used within 4 hours after removal from a drying or storage oven shall be redried before use. Electrodes which have been wet shall not be used.
- K. Headed Stud Type Shear Connectors: Cold finished carbon steel complying with ASTM A-108, Grade 1015 or 1020, Type B, with dimensions complying with AISC Specifications.
 - 1. Shear studs: Conform to AWS "Structural Welding Code" D1.1 and as shown on contract drawings and as herein specified.
 - 2. Shear connectors: 3/4" round studs welded through galvanized steel deck to steel beams.
 - 3. Field applied shear connectors (3/4" diameter studs) shall completely develop the horizontal shear capacity of all beam and girders. The number of 3/4" diameter studs shown on the drawings assumes a horizontal shear capacity of 15,800 or 19,600 pounds per stud for normal weight concrete and 13,300 or 16,400 pounds per stud for lightweight concrete

- topping slabs (per LRFD). If the arrangement of the 3/4" studs or the geometry of the available deck voids are such that the full horizontal shear capacity of the 3/4" stud cannot be developed, additional 3/4" diameter studs shall be provided.
4. Substantiate horizontal shear capacity of 3/4" diameter studs in metal deck void with light weight structural concrete with full scale push off tests conducted by a recognized University of Commercial Testing Laboratory at no increase in contract price.
 5. Welders and welding procedure: In accordance with manufacturer's instruction.
Coordinate with placing of steel deck.
- L. Structural Steel Primer Paint: Use one of the following:
1. Steel Located Interior of Exterior Building Walls not receiving fireproofing:
 - a. Description
 - 1) Short oil alkyd or modified alkyd
 - 2) Surface Preparation: SSPC SP-3 or SSPC SP-2.
 - b. Acceptable Manufacturers and Products:
 - 1) Carboline Company, St. Louis, MO: Carbocoat 115, at 1.5 to 2.0 mils dry film thickness.
 - 2) InsulX, Montvale, NJ: Corotech V130 Series Quick Dry Alkyd Metal Primer, at 1.9 to 2.1 mils dry film thickness.
 - 3) International Protective Coatings, Houston, TX: Interprime 140, at 1.4 to 1.8 mils dry film thickness.
 - 4) PPG Paints, Pittsburgh, PA: MetalCase 85 7-852 Series Alkyd Rust Inhibitive Metal Primer, at 2.1 to 2.5 mils dry film thickness.
 - 5) Tnemec Company, North Kansas City, MO: Series 88HS Azeron HS Primer, at 2.0 to 3.5 mils dry film thickness.
 2. Steel Located within Exterior Building Walls or in Exterior Enclosures Outside of Exterior Walls not receiving fireproofing.
 - a. Description:
 - 1) Polyamide epoxy, cycloaliphatic amine epoxy, or aromatic polyurethane mio-zinc filled.
 - 2) Surface Preparation: SSPC SP-3 or SSPC SP-2.
 - b. Acceptable Manufacturers and Products:
 - 1) Carboline Company, St. Louis, MO: Carboguard 890, at 6 to 8 mils dry film thickness.
 - 2) E.I. DuPont deNemours and Company, Wilmington, DE: Corlar® 2.1 PR-P™ Productive Epoxy Primer, at 3 to 5 mils dry film thickness.
 - 3) InsulX, Montvale, NJ: Corotech V160 Series Epoxy Mastic Coating, at 4.6 to 7.2 mils dry film thickness.
 - 4) International Protective Coatings, Houston, TX: Inerplus 880, at 3 to 5 mils dry film thickness.
 - 5) PPG Paints, Pittsburgh, PA: Pitt-Guard 97-145 Series Polyamide Epoxy Mastic Coating, at 4 to 7 mils dry film thickness.
 - 6) Tnemec Company, North Kansas City, MO: Series 394 PerimePrime, at 2.5 to 3.5 mils dry film thickness.
 3. For exterior architectural exposed structural steel, use the following:
 - a. Primer - Tnemec Company, North Kansas City, MO: Series 90-97 Tneme-Zinc, a two-component, moisture-cured zinc rich primer, (color grey) at 2.5 to 3.5 mils dry film thickness.
 - b. Intermediate Coat - Tnemec Company, North Kansas City, MO: Series N69 Hi-Build Epoxoline II, a polyamidoamine epoxy, (color grey) at 2.0 to 3.0 mils dry film thickness.
 - c. Top Coat - Tnemec Company, North Kansas City, MO: Series 1070 Fluoronar, an advanced thermoset solution fluoropolymer, (color black) at 2.0 to 3.0 mils dry film

- thickness.
- d. Or approved equal.
- M. Structural Steel Protective Coating: All structural steel exposed to the weather or embedded in exterior masonry walls shall be hot-dip galvanized in accordance with ASTM A123.
- N. Non-Shrink Grout: CRD C-588, factory pre-mixed grout. Products are subject to compliance with requirements, provide one of the following Type D, Non-metallic grouts:
1. "Masterflow 713"; Master Builders
 2. "SonogROUT"; Sonneborn - Contact.
 3. "Euco-NS"; Euclid Chemical Company.
 4. "Five Star Grout"; U.S. Grout Company
 5. "DuragROUT"; L & M Construction Chemical Company
- O. Diamond Steel Plate by Lucas or approved equal.

2.2 FABRICATION

- A. General: Fabricate items of structural steel in accordance with AISC Specifications and as indicated on the final shop drawings. Properly mark and matchmark all materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling. Provide camber in structural members where indicated.
- B. Temporary Field Connections: Temporary erection connections shall consist of at least one clip angle and two 3/4" diameter bolts, remote from or compatible with the field welded connections. The Contractor shall be responsible for the design, function and use of all temporary erection connections. Remove temporary connections if they interfere with architectural finishes.
- C. Permanent Field Connections: High-strength bolts, for use in permanent slip-critical or bearing type connections with threads in shear planes, shall conform to ASTM A-325.
1. Shear web connections: "Double angle connections" as described in Table 10-1, 10-2, & 10-3 of AISC Steel Construction Manual, 14th Edition, with shop welds and permanent field high strength bolts. However, in no case shall the shear web connections be designed for less than the beam reactions shown in paragraphs 2.2.C.5 below, or as shown on the contract documents.
 2. Single angle connections may be used in the webs of beams, provided that the connection is designed for the eccentric load, except as otherwise noted on the drawings.
 3. Connections: Made with at least 3/4" diameter high strength bolts in slip-critical, pre-tension, or snug-tightened connections with threads in shear planes. All high-strength bolts shall be installed in accordance with Section 8.1 for snug-tightened connections, and section 8.2 for pre-tensioned and slip-critical connections of the AISC Specifications for Structural Joints Using ASTM A-325 or A-490 bolts, as approved by the Research Council on Structural Connections dated 06/30/2004. At all slip-critical connections, faying surfaces shall meet the requirements of section 3.2.2. All pre-tensioned bolts shall be twist-off type tension control bolt assemblies.
 4. Unless otherwise specified in the contract documents, all beam, joist, joist girder and column connections shall be as follows:
 - a. Beam to Beam Connections: Snug-tightened joints.
 - b. Beam to Column Connections: Snug-tightened joints.
 - c. Joist and Joist Girder to Column Connections: Snug-tightened joints.
 - d. Connections Subjected to Stress Reversal Conditions (Braced Frames, Moment Frames, etc.):

- 1) Bolts In Standard Holes: Pre-tensioned joints.
 - 2) Bolts In Oversized or Slotted Holes: Slip-critical joints.
5. All shear connections shall develop the end reaction (Ultimate LRFD Load) $\phi_b W_c / 2L$, where " $\phi_b W_c$ " is the uniform load constant in kip-foot, and where "L" is the span in feet, as shown in the tables "Uniform Load Constants for Beams" (laterally supported) for given shape and steel specified, AISC Manual of Steel Construction 14th Edition, unless otherwise specified.
6. All seated beam connections shall be designed so that the stiffener is clear of the finished ceiling and column encasement. The width of the stiffened seat shall not exceed 9". Beam web stiffeners shall be added as necessary to satisfy web yielding and web crippling code requirements.
7. All moment connections shall develop the full moment capacity of the section unless noted otherwise on plan.
- D. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for the passage of other work through steel framing members as indicated. Provide threaded nuts welded to framing, and other specialty items as shown to receive other work.
1. Cut, drill or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.
- E. Heavy Shapes & Sections: When tensile splices in ASTM A6 Group 4 & 5 shapes and shapes built-up with plates more than 2" thick that are fabricated with complete-joint-penetration groove welds, material notch-toughness requirements as given in Section A3.1c, splice requirements as given in Section J1.5, weld access hole details as given in Section J1.6, welding preheat requirements as given in Section J2.8, and thermal cut surface preparation and inspection requirements as given in section M2.2 of the LRFD "Specification for Structural Steel Buildings", Second Edition, Part 6 shall apply.

2.3 SHOP PAINTING

- A. General: Shop paint all structural steel work, except members or portions of members to be embedded in concrete, mortar, or sprayed on fireproofing. Paint embedded steel on exposed portions and initial 2" of embedded areas only.
1. Do not paint contact surfaces which are to be welded or high strength bolted.
 2. Apply a minimum of 2 coats of paint to surfaces, which are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.
- B. Surface Preparation: After inspection and before shipping, clean steel work to be painted. Remove loose rust, loose mill scale and spatter, slag or flux deposits. Comply with Steel Structures Painting Council (SSPC) as follows:
1. SP-1 "Solvent Cleaning" for removing oil, grease and similar contaminants.
 2. SP-2 "Hand Tool Cleaning" for general cleaning.
 3. SP-3 "Power Tool Cleaning" for general cleaning.
 4. SP-6 "Commercial Blast Cleaning" for all steel beams, columns and lintels exposed to the weather or embedded in exterior walls.
- C. Application:
1. Immediately after surface preparation, apply structural steel primer paint in accordance with manufacturer's instructions and at a rate to provide the uniform minimum dry film thickness

- indicated. Use painting methods which will result in full coverage of joints, corners, edges, and all exposed surfaces.
2. Provide a one-coat shop applied paint system complying with Steel Structures Painting Council (SSPC)-Paint System Guide No. 7.00.
 3. Immediately after surface preparation, apply the hot-dip galvanizing in accordance with ASTM A123 at the coating weight required by Table 1 to provide a uniform mil dry film thickness of 3.4 mils. Use galvanized methods which will result in full coverage of joints, corners, edges and all exposed surfaces.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Erector must examine the areas and conditions under which structural steel work is to be installed including all anchor bolts and leveling plates installed under other contracts, and notify the Owner in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Erector.

3.2 ERECTION

- A. General: Comply with the AISC Specifications and Code of Standard Practice, and as herein specified. Maintain work in a safe and stable condition during erection.
 1. Structural steel with finished topcoat paint and galvanized steel shall be handled using nylon slings and wood dunnage to minimize damage.
- B. Anchor Bolts: Furnish anchor bolts and other connectors required for securing structural steel to foundations and other in-place work.
- C. Furnish templates and other devices as necessary for presetting bolts and other anchors to accurate locations.
 1. Refer to Division 3 sections for anchor bolts installation in concrete.
- D. Setting Leveling Plates:
 1. Clean concrete bearing surfaces and roughen to improve bond. Clean the bottom surface of leveling plates.
 2. Set loose leveling plates for structural members on wedges, or other adjusting devices.
 3. Tighten anchor bolts after the plates have been positioned and leveled to proper elevation. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the base plate prior to packing with grout.
 4. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure.
- E. Temporary Shoring and Bracing: Provide, as required, with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of the structures as erections proceeds.
 1. Provide temporary planking and working platforms as necessary to effectively complete the work.

- F. Field Assembly: Set structural members to the lines and elevations indicated. Align and adjust the various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
1. Splice members only where indicated.
 2. Do not enlarge unfair holes in members by burning or by the use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
 3. Do not use gas cutting torches in the field for correcting fabrication errors in the structural framing. Cutting will be permitted only on secondary members which are not under stress as acceptable to the Structural Engineer. Finish gas-cut sections equal to a sheared appearance when permitted.
- G. Contractor shall be responsible for the preparation of the surfaces to which studs are to be attached. Field weld studs (shear connectors) through thickness of galvanized steel floor deck. The stud manufacturer shall have a representative present at the start of work to ensure the proper use of studs and welding equipment. Remove arc shield after stud welding is complete.
- H. Touch-Up Painting:
1. Immediately after erection, clean field welds, bolted connections, and abraded areas of the shop paint, and paint all exposed areas with the same material as used for shop painting. Apply by brush or spray to provide the minimum dry film thickness as previously specified.
 2. Steel which is abraded and rusty shall have primer and topcoat reapplied. Steel which is only abraded shall have topcoat reapplied.
 3. Immediately after erection, clean field welds, bolted connections, and abraded areas of the hot-dip galvanized coating, and coat all exposed areas per ASTM A780. Apply coating to provide a minimum dry film thickness of 3.4 mils as previously specified.
- I. Building Plumbness: The Contractor shall hire a registered surveyor to verify that the exterior perimeter structural steel columns have been installed within the tolerances specified by the AISC Commentary to the Code of Standard Practice for Buildings and Bridges - Section 7.13.1.1. A report shall be submitted to the architect for approval prior to final acceptance of the work.

3.3 SHOP AND FIELD WELDING

- A. Welding: Where structural joints are made by welding, the details of all joints, the technique of welding employed, the appearance and quality of welds made and the methods used in correcting defective work shall conform to requirements of the AISC Specification for the Design, Fabrication and Erection of Structural Steel for Buildings and the Structural Welding Code D1.1 of the American Welding Society. In addition, welds shall be made only by operators who have been previously qualified by tests as prescribed in the Standard Qualification Procedure of the American Welding Society, to perform the type of work required. The Contractor shall pay all costs for the qualification of welders. All welding equipment shall be direct current reverse polarity type.

3.4 INSPECTION AND TESTING

- A. All inspections and tests shall meet the requirements of IBC.
- B. Mill Inspection: The Contractor shall furnish Morabito Consultants, Inc. and the inspection agency a copy of the certified mill test reports of the chemical analysis and physical tests for each

member and each beam number.

- C. Shop Inspection: The Owner shall employ an inspection agency approved by the Structural Engineer to inspect the steel in the shop. This inspection shall include the joining of parts, punching, bolting, welding painting, etc. The inspection agency shall submit to the Structural Engineer, prior to the delivery of the steel to the job site, certified reports showing the results of these inspections. The shop inspection shall include the type and manufacturer of the paint used.
- D. Field Inspection: The Owner shall employ an inspection agency approved by the Structural Engineer to inspect the erected steel in the field. This inspection shall include alignment, position of member, bolting, welding, painting, etc. The inspection agency shall also submit to the Structural Engineer, prior to the Contractor's request for payment for the erected steel, certified reports showing results of these inspections.
- E. Costs: The cost of all the tests and inspections are to be borne by the Owner.
- F. Shop Inspection shall include, but is not limited to:
1. Examination of mill certificates in reference to material being fabricated.
 2. All welding procedures including certification of welders and electrode identification.
 3. All shop connections.
 4. Shop preparation for butt welds.
 5. Location of all clips, seats, holes and other accessories.
 6. Type and quality of shop paint and painting.
- G. Field Inspection shall include, but is not to be limited to:
1. See that all steel is properly stored and protected.
 2. Vertical and horizontal alignment of all beams and columns before and after welding.
 3. Temporary guying of building.
 4. All joints, prior to welding, for required clearances and preparation.
 5. Type of material and equipment used to make connections.
 6. Preheat requirements due to type of steel and weather conditions.
 7. All welded and bolted field connections.
 8. Check field touch-up painting prior to covering by architectural materials.
 9. Inspection shall mark all connections when they are finally approved.
 10. Welding of steel floor deck.
 11. Welding of shear connectors (studs).
 12. Welding and/or screwing of steel roof deck.
 13. Perform visual inspection of all welds.
 14. Perform tests of welds as follows:
 - a) Magnetic Particle Inspection: ASTM E-709 and E-45; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration not acceptable.
 - Locations: Partial penetration welds
 - b) Ultrasonic Inspection: ASTM E-164.
 - Locations: Full penetration welds
 - c) Liquid Penetrant Inspection: ASTM E-165 and E-433
 - Locations: Partial penetration welds
 - d) Radiographic Testing: ASTM E-142, E-94, and E-592; minimum quality level "2-2T"
 - Locations: Full penetration welds
- H. Non-Destructive Testing: In addition to the visual inspection as indicated above, ultrasonic

testing 50% of groove welds shall be required. The testing shall be done using "Branson" ultrasonic testing equipment, or other approved non-destructive testing systems. If faulty welds are discovered by this testing, costs of any additional tests shall be borne by the Contractor.

- I. Heavy Shape and Section Testing: ASTM A6 Group 4 & 5 shapes and shapes built-up with plates more than 2" thick that are fabricated with complete-joint-penetration groove welds shall be supplied with Charpy V-Notch testing in accordance with ASTM A6, Supplementary Requirement S5, and all other inspection and testing requirements as given in Sections A3.1c, J1.5, J1.6, J2.8, and M2.2 of the LRFD "Specification for Structural Steel Buildings", Second Edition, Part 6.
- J. Reports: Mill certificates shall be reviewed and approved by the Inspection Agency and Structural Engineer prior to fabrication.
 - 1. Certified shop inspection reports indicating that the steel as fabricated meets all the requirements of the Contract Documents shall be submitted to the Structural Engineer prior to shipment.
 - 2. Certified field reports, indicated that the steel as erected meets all of the requirements of the Contract Documents, shall be submitted to the Structural Engineer prior to starting of other work preventing access for any possible repairs.
- K. Notification: It shall be the responsibility of the Contractor to see that the inspection agency is supplied with a complete set of Contract Drawings and Specifications and approved shop drawings before the work is started. It shall be the Contractor's responsibility to notify the inspection agency before the start of fabrication and before the start of erection of steel, a sufficient time before such work is started in order that the inspector may properly schedule the required inspections. If material is shipped prior to shop inspection, any additional costs of inspection and repair shall be borne by Contractor.

3.5 CONTRACTOR'S RESPONSIBILITY

- A. Acceptance of the shop and field inspection done by the testing agency pertaining to the structural steel does not relieve the Contractor of his responsibility to insure that the project has the proper sizes, strength, fabrication and erection procedures and any other requirements of the Contract Documents.
- B. If the installed structural steel is not erected in accordance with the contract documents and approved shop drawings, the contractor shall hire a professional engineer registered in the state of the project to prepare corrective calculations and details which shall be submitted to the engineer for approval prior to completing any corrections in the field. All costs incurred by the contractor to complete this corrective design and field repairs shall be paid by the contractor.
- C. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- D. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project, and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 05 1200

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SECTION 05 21 10

COMPOSITE STEEL JOIST (HAMBRO)

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS: The General Conditions, any Supplementary General Conditions and Division 1, General Requirements, are hereby made a part of this Section as fully as if repeated herein.
- 1.2 SECTION INCLUDES
- A. Fabrication and installation of the composite floor system shall be in accordance with these specifications and applicable drawings. Provide one of the following:
 - 1. Hambro D-500 steel joists and roll bars as manufactured and marketed by Canam Hambro Systems, Inc., or their authorized representative.
 - 2. Or approved equal
 - B. Assist Contractor with the coordination of the composite floor system with the other structural, mechanical, electrical and architectural components of the building.
- 1.3 RELATED WORK
- A. Division 3 Concrete.
 - B. Division 4 Masonry
 - C. Section 05 1200 Structural Steel
- 1.4 CODES AND REFERENCES
- A. American Institute of Steel Construction (AISC): "Manual of Steel Construction, 14th Edition"
 - B. American Iron and Steel Institute (AISI): Specification for the Design of Cold-Formed Steel Structural Members.
 - C. American Welding Society (AWS): D1.1 Structural Welding Code Standard Qualification Procedures or equivalent Canadian Welding Bureau (CWB).
 - D. Structural fire and sound characteristics shall meet the requirements of the International Building Code (IBC).
 - E. Steel Structures Painting Council (SSPC): Steel Structures Painting Manual, Volume 1 and Volume 2, Systems and Specifications.
- 1.5 DESIGN CRITERIA
- A. Flexural and shear design of the Hambro D-500 steel joists shall be the ultimate strength method and as described in the Hambro literature. The top chord shall be designed in accordance with the American Iron and Steel Institute Specification for the Design of Cold-Formed Steel Structural Members; and the webs shall be designed in accordance with the American Institute of Steel Construction Specification for Design, Fabrication and Erection of Structural Steel for Buildings.

- B. The slab shall be designed in accordance with the Building Code Requirements for Reinforced Concrete (ACI 318).
- C. Design Computation: Provide design computation for all composite steel joists with special loads beyond those required by the standard uniform loads specified on the drawings. Computations shall be submitted under the seal and signature of registered professional Structural Engineer in the State of Maryland.
 - 1. See Structural drawings for location of composite steel joists with special loading requirements.
- D. The Hambro joists that bear on metal stud walls shall be staggered minimum 16" from floor to floor to assure that the metal stud walls are uniformly loaded. If joist staggering is not possible due to MEP conflicts, it will be necessary to provide additional metal studs to prevent wall overstress.
- E. The Hambro floor system shall be designed to not exceed the vibration parameter of $a/g = 0.50\%$.

1.6 QUALIFICATIONS

- A. All welding materials and methods used for fabrication shall be in accordance with the requirements of the Canadian Welding Bureau (CWB) or the American Welding Society (AWS).
- B. All field welders shall be certified, qualified operators in accordance with the requirements of CWB or AWS for the materials and methods being used, except that composite joist repairs or modifications that may be required may be done by factory approved personnel.

1.7 SUBMITTALS

- A. Submit detailed erection drawings to the Architect/Engineer for approvals showing material lists, mark numbers, types, locations and spacing of all joists and accessories. Show method of attachment of the joist to supporting members as provided by the Structural drawings. Contract drawing notes relative to the composite floor system shall be considered a part of this specification as though fully set forth herein.
- B. Field Use drawings prepared only from approved shop drawings shall be used for fabrication and erection.
- C. Figured dimensions only shall be used; scaling drawings shall not be permitted.
- D. LEED v4 Submittals:
 - 1. Recycled Content Product Data for LEED v4 Credit: For structural steel products having recycled steel content, provide documentation indicating percentages by weight of post-consumer and pre-consumer recycled content.
 - a. Include statement indicating costs for each structural steel product having recycled content.
 - 2. Regional Materials Product Data for LEED v4 Credit: Provide documentation identifying the locations of facilities for manufacturing and fabrication of structural steel products provided under this Section.

1.8 HANDLING AND STORAGE

- A. Care shall be exercised at all times to avoid damage to the composite joists through careless handling during unloading, storing and erecting.

PART 2 - PRODUCTS

2.0 LEED v4 REQUIREMENTS

- A. Recycled Content of Structural Steel: Provide structural steel products with an average recycled content of steel materials so post-consumer recycled content plus one-half of pre-consumer recycled content is not less than 50 percent.
- B. Regional Materials Content of Structural Steel: Provide documentation for structural steel products that have been fabricated within 500 miles of the Project site.

2.1 MATERIALS

- A. Joist: All composite joists shall be fabricated by Canam Hambro in accordance with Section 1.40 and 1.50 of these specifications.
1. Top chord member
 - a) Hambro D-500 steel joist top chord shall be a continuous shear connector of cold rolled steel, minimum 13 gauge with $F_y = 50,000$ psi minimum
 2. Bottom chord member shall consist of either hot rolled angles with $F_y = 50,000$ psi minimum or cold rolled angles of equal capacities of steel, shop painted with a rust inhibitive primer.
 3. Web members designed to equal or exceed Steel Joist Institute (SCI.) specifications shall consist of minimum 7/16" diameter hot rolled bars, some of which are continuous, bent at top chord joint locations, with $F_y = 50,000$ psi minimum, shop painted with a rust inhibitive primer.
- B. Roll Bars, Forming Angles and Clamps: Designed specifically to support 3/8" to 5/8" plywood form boards, a 40 psf construction load and slab weight until the slab has cured sufficiently (concrete cylinder strength at least 500 psi) and act as temporary bridging and spacers for composite joist.
- C. Joist Bearing Seat: Angle seat shall be designed to resist total end reaction, and bearing area shall be proportioned so that unit bearing pressure shall not exceed 250 psi for joist laid on masonry walls and 750 psi for joist laid on structural concrete.
- D. Slab Reinforcement: 6" x 6" - W2.9/W2.9 welded wire fabric, with $F_y = 65,000$ psi minimum unless otherwise noted.
- E. Forms: Constructed of 4' or 5' plywood and may be from 3/8" to 5/8" thick, unless otherwise noted.
- F. Concrete:
1. Minimum ultimate compressive strength $f_c' = 3000$ psi at 28 days.
 2. Standard weight, i.e., 148 pcf.
 3. Maximum size coarse aggregate: 1/2 inch.
- G. Prime Paint: AISC-SJI. Specifications, Type I Grey oxide; Type II Asphaltic not permitted.
1. Manufacturers:
 - Tnemec Company - Series 88HS Azerox HS Primer

- Or approved equal

H. Structural Steel Protective Coating: All composite steel joist exposed to the weather and supporting framed garage slabs shall be hot-dip galvanized in accordance with ASTM A123-84 when noted on Structural drawings.

2.2 FABRICATION

A. Fabrication: In accordance with the Hambro Shop Standard Practice.

B. The Joist Top Chord: Hambro D-500 joist top chord shall be fabricated to allow for a minimum of 1-1/2" embedment into the concrete slab.

C. Provide composite joist bottom chord ceiling extensions, unless otherwise noted.

D. After installation, permissible composite joist sweep shall be 1/4" in 25'.

E. Composite joists shall be fabricated with approximately the following cambers:

- 15' - 20' span.....1/2" - 3/4"
- 20' - 25' span.....3/4" - 1"
- 25' - 30' span.....1" - 1-1/2"

F. If the rotation of a composite joist during construction exceeds 10 degrees, the composite joist manufacturer shall provide analytical proof of the system's integrity to the Engineer of Record or recommend remedial repairs.

G. Shop Painting: Shop paint all steel joists except members or portion of members to be embedded in concrete or sprayed on fireproofing. Paint embedded steel on exposed portions and initial 2 inches of embedded areas only.

1. Remove loose scale, heavy rust, and other foreign materials from joists and accessories before application of shop paint in accordance with SSPC SP-2 "Hand Tool Cleaning" and SP-3 "Power Tool Cleaning."
2. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning."
3. Apply one shop coat of rust inhibitive prime paint to steel joists and accessories, by spray, dipping, or other method.
4. Provide continuous minimum dry film thickness of not less than 1.0 mils.

2.3 QUALITY CONTROL

A. Joist shall be manufactured only in a fabricator's facility having a continuous quality control program which is subjected to monitoring by unannounced plant inspections by an approved independent agency. An approved agency and inspection program would be the Underwriters' Laboratories Follow Up Service as typically performed for structural components listed in the Underwriters' Laboratories' Fire Resistance Index. The inspection shall include checking of size, span, assembly and weld.

PART 3 - EXECUTION

3.1 ERECTION

A. Installation shall be in accordance with the manufacturer's recommendations, its Handbook of Instruction for the Erection of the Hambro D-500 joist composite floor system, and any amendments which may be issued by the manufacturer.

1. Special conditions requiring top and bottom bracing shall be shown on Field-Use drawings prepared by supplier.
- B. All joists shall be erected in such a manner so that they are vertical, level and plumb and at the proper elevations. Any shimming that may be required shall be done with metal.
 1. Joists must be welded to support members before any decking is placed (minimum 1.5" long 3/16" weld each side of bearing seat).
 2. Tie joists and trusses shall be bolted or welded at the top chords only. See structural details (Do not remove any guy wires until all top and bottom column connections have been secured.)
- C. Welded Wire Fabric:
 1. Welded wire fabric shall conform to ASTM A-185, Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement, $F_y = 65,000$ psi minimum. Lapping shall be in accordance with the provisions of ACI 318.
- D. Concreting Practice:
 1. Do not pour concrete in excess of the slab thickness stated on the erection drawings.
 2. Do not drop large bucket loads in concentrated areas over composite joists.
 3. Construction joints may never be made parallel to and within 7" of the top chord. Pours should be broken off perpendicular to the top chord wherever possible. Pours may be broken off parallel to joists if this is at the midspan between two joists. Pours should be stopped in a free-form fashion to assure good bond for the next pour. Mesh should extend beyond construction joint 24" minimum.
 4. It is required that the following ACI publications be followed:
 - a) ACI 301 - Specifications for Structural Concrete for Buildings.
 - b) ACI 305 - Recommended Practice for Hot-Weather Concreting.
 - c) ACI 306 - Recommended Practice for Cold-Weather Concreting.
- E. Stripping: Under normal conditions, formwork may be stripped at such time as the concrete has reached a cylinder strength of 500 psi, normally the day following the pour.
- F. Construction Loads:
 1. No construction load shall be placed within a bay until 4 consecutive joists have been laterally braced with all roll bars and form boards in position. Bundles of plywood should not be placed on composite joist but rather on supporting walls or girders.
 2. During construction, the non-composite capacity of joists 4'-1-1/4" on center, supporting a 3" concrete slab, shall be 260 pounds per linear foot, unless otherwise noted. Joists spaced at greater than 4'-1-1/4" on center and/or supporting a concrete slab greater than 3" thick, shall have their non-composite capacity adequately increased to carry the additional load.
- G. Minimum joist bearing shall be as follows:
 1. Steel Support: 2-1/2".
 2. Masonry Support: 4" nominal, 3-1/2" minimum. Bearing capacity of supporting units to comply with applied shoe end reaction, based on minimum supplied bearing area of 17.5 square inches.
 3. Concrete Support: 3-1/2".

- H. To ensure sound and vibration damping, and to laterally brace beam compression flange, formwork shall be depressed to encase steel beam top flange in concrete. Spandrel beams shall be laterally braced and anchored to the slab as shown on the plans by the Engineer. During the construction stage, care shall be taken to assure that all beams are sufficiently braced to provide both lateral and torsional stability.
- I. Touch-Up Painting:
 - a. Steel which is abraded and rusty shall have primer and topcoat reapplied. Steel which is only abraded shall have topcoat reapplied.
 - b. Immediately after erection, clean field welds, bolted connections, and abraded areas of the hot-dip galvanized coating and coat all exposed areas per ASTM A780-80. Apply coating to provide a minimum dry film thickness of 3.4 mils as previously specified.

3.2 INSPECTION

- A. The owner shall employ and pay for the services of an Inspection Agency, acceptable to the Structural Engineer, to perform a field review of the installation of the composite joist system.
- B. Field inspection shall include but is not limited to a review of the joist fabrication, shop and field welding, joist alignment, formwork installation and concrete placement.
- C. See spec sections 03 3000 and 05 1200 for additional information.

3.3 CONTRACTOR'S RESPONSIBILITY

- A. Acceptance of the shop and field inspection done by the testing agency pertaining to the structural steel does not relieve the Contractor of his responsibility to ensure that the project has the proper sizes, strength, fabrication and erection procedures and any other requirements of the Contract Documents.
- B. Submit copies of all daily reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- C. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 05 2110

ISECTION 05 3 123

STEEL ROOF DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Metal Decking for roof construction.

1.3 RELATED WORK

- A. Section 05 1200 Structural Steel Framing
- B. Section 05 2100 Steel Joist Framing
- C. Section 05 4000 Cold-Formed Metal Framing

1.4 QUALITY ASSURANCE

- A. Erector/Installer's Qualifications: Experienced in the installation and/or erection of metal decking and accessories; approved for the installation of the decking by the manufacturer of the decking.
- B. Product compatibility: Products indicated as part of a specific assembly shall be certified by each manufacturer to be compatible with the other products proposed for use by the Contractor in that assembly. Specific areas requiring certified compatibility are composite action, and built-up roof assemblies.
- C. Wind Uplift: All roof deck shall be designed and anchored to resist a net wind uplift as shown on the contract drawings.

1.5 REFERENCES

- A. Steel Deck Institute (SDI):
 - "Steel Roof Deck Design Manual."
- B. American Iron and Steel Institute (AISI):
 - AISI-02 - "Specifications for Design of Light Gauge Cold-Formed Steel Structural Members."
- C. American Welding Society:
 - (AWS) D1.3 - "Structural Welding Code-Sheet Steel"
- D. ASTM – American Society for Testing & Inspection
 - A-611 - "Standard Specification for Structural Steel (SS), Sheet, Carbon, Cold Rolled" for Uncoated and Painted Steel.
 - A-653 - "Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated Galvannealed) by the Hot-Dip Process.

- A-780 – “Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings”
- A-924 – “Specification for General Requirements for Sheet Steel, Metallic-Coated by the Hot-Dip Process”

1.6 SUBMITTALS

- A. Shop Drawings: Show complete erection layouts, connection details, welds, and anchorages. Indicate framing and support locations, dimensions and marking of decking sections to correspond with installation sequence and procedure; show connections with adjoining construction and materials, types of welds and locations of all holes and/or openings in decking.
- B. Submit technical data on chromate primer and acrylic top coat along with color samples for approval.
- C. LEED Submittals: Comply with Section 018113
 - 1. MR Credit: BPDO – Environmental Product Declarations
 - a. For steel: Industry-wide or product-specific EPD.
 - 2. MR Credit: BPDO – Sourcing of Raw Materials
 - a. For recycled content steel: Documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include material cost value.
 - b. For regionally sourced steel: Documentation indicating location of extraction, manufacture, purchase of primary raw materials. Include material cost value.

PART 2 - PRODUCTS

2.0 LEED v4 REQUIREMENTS

- A. Recycled content: Provide steel at least 50 percent post-consumer recycled content.
- B. Regional Materials: Provide minimum 25 percent of steel manufactured and of primary raw materials extracted or recovered within 100 mile radius of Project Site.

2.1 MATERIALS

- A. Steel for galvanized metal deck units: ASTM A-653, Structural Quality, Grade 33.
- B. Steel for painted metal deck units: ASTM A-611, Grade C.
- C. Sheet metal accessories: ASTM A-653, commercial quality, galvanized.
- D. Galvanizing: ASTM A-924, Designation G90.
- E. Galvanizing repair paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with ASTM A-780.
- F. Paint: Shop applied, baked on, rust-inhibitive white paint, comprising of a 2 coat system of chromate primer and acrylic top coat, for application to metal surfaces which have been chemically cleaned and phosphate chemical treated.

2.2 FABRICATION

- A. General: Form deck units in lengths to span three or more supports, with flush, telescoped or nested side laps, unless otherwise indicated.
- B. Roof deck units: Provide deck configurations complying with SDI "Basic Design Specifications," of the gauge, depth and width shown.
 - 1. Roof deck shall be 1-1/2" x 22 gauge type "B" deck by Vulcraft or approved equal.
- C. Metal cover plates: Fabricate metal cover plates for end-abutting deck units of not less than 18 gauge sheet steel. Form to match contour of deck units and approximately 6" wide.
- D. Metal closure strips: Fabricate metal closure strips, for openings between decking and other construction, of not less than 18 gauge sheet steel. Form to provide tight-fitting closures at open ends of flute and sides of decking.
- E. Roof sump pans: Fabricate from single piece of 14 gauge galvanized sheet steel with level bottoms and sloping sides to direct water flow to drain, unless otherwise shown. Provide sump pans of adequate size to receive roof drains and with bearing flanges not less than 3" wide. Recess pans not less than 1 1/2" below roof deck surface, unless otherwise shown or required by deck configuration. Holes for drains will be cut in the field.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Examine the areas and conditions under which metal decking is to be installed and provide written notification of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

3.2 INSTALLATION

- A. General: Install deck units and accessories in accordance with manufacturer's recommendations and final shop drawings, and as specified herein. Place deck units on supporting steel framework and adjust to final position with ends accurately aligned and bearing on supporting members before being permanently fastened. Do not stretch or contract side lap interlocks. Place deck units flat and square, secured to adjacent framing without warp or excessive deflection. Coordinate and cooperate with structural steel erector in locating decking bundles to prevent overloading of structural members.
- B. Fastening deck units:
 - 1. Fasten 1 1/2" roof deck units to steel supporting members by not less than 5/8" diameter fusion welds, spaced not more than 6" o.c. for a 12'-0" width around the entire building perimeter, and 12" o.c. for all other roof areas, with additional welds as required for diaphragm strength as shown in the contract documents. Comply with AWS requirements and procedures for manual shielded metal arc welding, the appearance and quality of welds, and the methods used in correcting welding work.
 - 2. Fasten roof deck units to light gauge framing with No. 12 tek screws at 6" o.c. for a 20'-0" width around the entire building perimeter and all masonry stair/elevator towers, and 12" o.c. for all other roof areas.
 - 3. Lock side laps of adjacent deck units between supports, at intervals not exceeding 6" o.c. for a 20'-0" width around the entire building perimeter and all masonry stair/elevator towers, and 24" o.c. for all other roof areas.

- C. Cutting and fitting: Cut and neatly fit deck units and accessories around other work projecting through or adjacent to the decking, as shown on the drawings.
- D. Reinforcement at openings: Provide additional metal reinforcement and closure pieces as required for strength, continuity of decking and support of other work shown. Reinforce decking around openings less than 72 square inches in size by means of flat galvanized steel sheet placed over opening on top of decking and fusion welded to surface of deck. Provide 14 gauge steel sheet of same quality as deck units at least 12" wider and longer than opening. Space welds at each corner and not more than 12" o.c. along each side. Openings greater than 72 square inches shall be supported by steel angle frames as shown on the structural drawings.
- E. Install 6" minimum wide sheet steel cover plates, of same thickness as decking, where deck changes direction. Puddle weld 12" on center maximum.
- F. Hanger slots or clips: Provide approved punched hanger slots between flutes of lower element where deck units are to receive hangers for support of ceiling construction, air ducts, diffusers, or lighting fixtures. Hanger clips designed to clip over male side joints of deck units may be used instead of hanger slots. Locate slots or clips at not more than 24" o.c. in both directions, not over 9" from walls at ends, and not more than 12" from walls at sides, unless otherwise shown. Provide manufacturer's standard hanger attachment devices. Location: at suspended ceilings.
- G. Roof sump pans: Place over openings provided in roof decking and weld to top decking surface. Space welds not more than 12" o.c. with at least one weld at each corner. Cut opening in roof sump bottom to accommodate drain size indicated.
- H. Closure strips: Provide metal closure strips at all open uncovered ends and edges of roof decking, and in the voids between decking and other construction. Weld into position to provide a complete decking installation.
- I. Touch-up painting: After decking installation, wire brush, clean and paint scarred areas, welds and rust spots on the top and bottom surfaces of decking units and supporting steel members. Touch-up galvanized surfaces with galvanizing repair paint applied in accordance with ASTM A-780. Touch-up painted surfaces with the same type of shop paint used on adjacent surfaces. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into the adjacent surfaces.
- J. Sloping roof support: When roof deck slope is perpendicular to support members (beam, joists, truss, etc.) span, provide continuous bent plate or steel shims by structural steel fabricator as required to assure full deck bearing at support.

3.3 INSPECTION

- A. All inspections and tests shall meet the requirements of IBC.
- B. The Owner shall employ an inspection agency approved by the engineer to inspect the field welding of the metal roof decking to the supporting structure. The cost of all the tests and inspections are to be borne by the Owner.
- C. See spec section 05 12 00 for further requirements.

3.4 CONTRACTOR'S RESPONSIBILITY

- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 05 3123

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SECTION 05 40 00

COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SCOPE

- A. The Contractor shall furnish all labor, materials, equipment and services necessary for and reasonably incidental to the furnishing and installation of all light-gauge metal framing as shown on the drawings and/or called for in these Specifications.

1.3 SECTION INCLUDES

- A. Load-bearing steel stud system at exterior masonry walls.
- B. Load-bearing steel joists in lintel assemblies, floor framing, roof framing, trusses, and rafters used as sloped roof framing.
- C. Prefabricated Columns.
- D. Unistrut framing for support of ceiling and MEP systems.

1.4 RELATED WORK

- A. Section 04 05 23 Masonry Accessories, Veneer Wall Ties.
- B. Section 04 20 00 Unit Masonry, Veneer Masonry.
- C. Division 5 Structural Metals.
- D. Division 6 Wood.
- E. Section 09 29 00 Gypsum Board, Gypsum Sheathing and Gypsum Board.
- F. Section 09 22 16 Non-Structural Metal Framing

1.5 REFERENCES

- A. Work shall meet the requirements of the following standards:
 - 1. American Iron and Steel Institute - A.I.S.I.
 - AISI S100 – 07/SI-10 -Design of Cold Formed Steel Structural Members
 - AISI S110 - Design of Cold Formed Steel Structural Systems – Special Bolted Moment Frames
 - S200 – Standard for Cold-formed Steel Framing – General Provisions
 - S210 – Standard for Cold-formed Steel Framing-Floor and Roof System Design.
 - S211 – Standard for Cold-formed Steel Framing Wall Stud Design

- S212 – Standard for Cold-formed Steel Framing Header Design
 - AISI S213-07/SI-10 – Standard for Cold-formed Steel Framing Lateral Design
 - S214 – Standard for Cold-formed Steel Framing-Truss Design
2. American Welding Society (A.W.S.)
 - D.1.1 - Structural Welding Code
 - D.1.3 - Specifications for Welding Sheet in Structures
 3. American Society for Testing and Materials (ASTM).
 - A 653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process, Structural (Physical) Quality
 - A 924 - General Requirements for the Steel Sheet, Metallic-Coated by the Hot-Dip Process
 - A 780 - Practice for the Repair of Damaged Hot-Dip Galvanized Coatings
 - A 766 - Electrodeposited Coatings of Cadmium
 - C 955 - Load-Bearing (Transverse and Axial) Steel Studs, Runners (Track), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases
 - C 1007 - Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories
 4. Brick Institute of America (BIA) Technical Notes
 - 28B - Brick Veneer Panel and Curtain Walls
 5. Federal Specifications:
 - FF-P-395 - Pin, Drive, Guided and Pin Drive, Power Actuated Fasteners for Power Actuated and Hand Actuated Fastening Tools
 - FF-S-325 - Shield, Expansion; Nail, Expansion; and Nail, Drive Screw (Devices, Anchoring Masonry)
 6. American Society of Civil Engineers
 - ASCE 7-10 - Minimum Design Loads for Buildings and Other Structures
- B. The most stringent requirements shall govern in conflicts between specified codes and standards. All components and cladding shall be designed utilizing exposure "C".

1.6 DESIGN REQUIREMENTS

- A. Employ and pay for services of a Structural Engineer to provide engineering data required for submittals and to certify manufacturer's submitted products will meet design requirements.
- B. Design system to meet performance requirements and regulatory requirements.
- C. The Hambro joists that bear on metal stud walls shall be staggered 16" from floor to floor to assure that the metal stud wall is uniformly loaded. If joist staggering is not possible due to MEP conflicts, it will be necessary to provide additional metal studs to prevent wall overstress

1.7 PERFORMANCE REQUIREMENTS

- A. Framing: Wall, floor, roof, and MEP support system assemblies shall meet the structural criteria indicated in the contract documents.
- B. All roof trusses shall be designed for the following minimum superimposed live and dead loads beyond the self-weight of the structure. All truss top & bottom chords shall utilize 16 gage studs, tracks and plates minimum. All roof trusses shall be designed so that the maximum live load deflection is less than the span in inches divided by 360 (L/360) or a maximum of 1" – whichever is less.
 - **Top Chord:**
Live Load = 30 psf (80psf at roof well)

Drifting Snow per IBC, and ASCE 7
Dead Load = 15 psf (60 psf at roof well)
Dead Load of all mechanical equipment shown on the contract drawings
Wind Load = 126 mph per IBC, and ASCE 7

- **Bottom Chord:**

Live Load = 0 (40psf at catwalk)
Dead Load = 5 psf
Dead Load of all mechanical equipment shown on the contract drawings

- C. Roof trusses and bridging shall be fabricated as 2 or more trusses using “C-shaped” light-gauge members (no proprietary shapes) connected toe to toe to provide a “tube-shaped” appearance for all truss members. Configuration of all truss chords, webs, and bracing shall be approved by the architect. If the proposed bracing is not acceptable to the architect, the truss shall be designed to eliminate the bracing (at no additional cost to the Owner). Connections between truss chords, diagonals and bridging shall be trimmed neat and shall not extend beyond the width of any member.
- D. Truss bracing for chord and web members shall meet the following requirements.
 - 1. Additional truss bracing beyond that shown on the drawings shall be provided as necessary in order to assure adequate bracing of truss members.
 - 2. Bracing between trusses chords and webs must be perpendicular to the member being braced.
 - 3. All bracing shall be continuous between a minimum of 4 trusses.
 - 4. Bracing forces at the end of all bracing lines shall be transferred to the top and bottom roof diaphragms by cross bridging.
 - 5. If inadequate truss bracing exists in the plane of the top and bottom chord of the trusses, the contractor shall design and install all required bracing to assure the truss lateral forces are adequately transferred to the building’s main force resisting system.
 - 6. If bracing cannot be installed as required above, the truss chord and web members shall be strengthened to eliminate the need for supplemental bracing.
- E. Steel Studs: Steel studs shall be of a configuration and gage to provide sufficient stiffness, as controlled by the maximum allowable deflection, under full live load, dead load and wind load of L/600 when secured to masonry veneer and L/360 in all other areas.
- F. Exterior walls shall be considered for transverse and axial loading with/without diaphragm action of the sheathing.
- G. Spacing of exterior wall studs shall never be less than 16” o.c. to accommodate wall insulation. Provide multiple studs as required to satisfy all design requirements.
- H. Contractor shall coordinate spacing of studs, locations of wall openings and locations of diagonal bracing with MEP drawings.
- I. Connections (member to member and member to structure) shall be thoroughly examined and designed.
- J. Selected exterior and interior walls shall be designed to provide frame stability and lateral load resistance. If diagonal steel strapping is used to transfer lateral loads to the structure and foundation, additional framing members may be required to resist the vertical component of the load from the diagonal bracing.

- K. Wall bridging shall be designed to provide resistance to minor axis bending and rotation of all wall studs including multiple jamb studs.
- L. Additional bracing/bridging beyond that shown on the drawings shall be provided as necessary in order to assure adequate bracing of truss members. Truss design shall verify adequacy/inadequacy of roof deck system to provide required bracing for roof rafters and trusses.
- M. Provide additional joists, trusses, rafters, wall studs, tracks, unistrut, bracing, connections, etc. beyond that which is presently shown on the contract documents as necessary to assure the roof, MEP systems support, and exterior wall system, etc. are complete and sufficient to meet all of the requirements of the local building code and ASCE 7.

1.8 SUBMITTALS

- A. Product Data: Catalog cuts showing materials and each component's dimensions and sectional properties.
- B. Shop Drawings: Indicate member sizes and spacing. Illustrate materials, shop coatings, steel thicknesses, details of fabrication, details of attachment to adjoining work, size, location, spacing of fasteners for attaching framing to itself, details of attachment to the structure, accessories and their installation, and critical installation procedures. Drawings may include plans, elevations, sections, and details.
 - 1. Shop and field assembly details including cutting and connections; Type and location of welding, bolting and fastening devices.
 - 2. If prefabricated framing is utilized, include individual panel drawings for each condition including configuration, dimensions, materials, attachments and panel location.
 - 3. Provide reinforcement details for holes cut through structural studs for each product.
- C. Samples: Samples (when requested) shall be representative pieces of all framing component parts and accessories. Pieces shall be 12 inches long and tagged with name of the Project, name of Contractor, and name of part.
- D. Certification: Statement from framing manufacturer certifying that materials conform to requirements of Contract Documents.
- E. Calculations: Engineering calculations shall be prepared verifying the assembly's ability to meet or exceed design requirements as required by local codes and authorities.
- F. LEED Submittals: Comply with Section 018113
 - 1. MR Credit: BPDO – Environmental Product Declarations
 - a. For steel: Industry-wide or product-specific EPD.
 - 2. MR Credit: BPDO – Sourcing of Raw Materials
 - a. For recycled content steel: Documentation indicating percentages by weight of pre-consumer and post-consumer recycled content. Include material cost value.
 - b. For regionally sourced steel: Documentation indicating location of extraction, manufacture, purchase of primary raw materials. Include material cost value.
 - 3. MR Credit: BPDO – Material Ingredients
 - a. For steel, if available: Material Ingredient Report

1.9 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacture of products specified in this Section with minimum 3 years documented experience.
- B. Installer: Welders shall be certified under provisions of AWS for structural welding and specific qualifications for sheet steel.
- C. Design Engineer: Registered Structural Engineer and licensed in the State of Project location, and experienced in the structural design of light-gauge framing systems.

1.10 SHOP DRAWINGS

- A. The Contractor shall submit the following for review:
 - 1. Shop drawings, together with complete erection drawings, indicating all fasteners and weld types, sizes and locations.
 - 2. Calculations sealed by a Structural Engineer registered in the state of the project for building components and connections required by the contract drawings and for all connections of the cold formed metal framing components to each other and to the building frame.
- B. Only shop drawings bearing the stamp of review of the Structural Engineers and Architects shall be used by the contractor for fabrication and erection.
- C. Shop and Erection Drawings shall not be reprints of the Contract Drawings. They shall, in the opinion of the Architect, be complete in all details and they shall locate, size, and mark all members. Details shall clearly indicate a manner of making all typical and special connections, amount of bearing, and shall accurately indicated the member's location relative to walls, spandrel sections, openings or other construction features. Erection drawings shall include a Field Weld Schedule, and sections and details covering all field welds required for the finished structure.
- D. Figured and field dimensions only shall be used; scaling drawings not permitted. The Contractor shall verify all dimensions and be responsible for coordinating same. Any conflict shall be referred to the Architect for decision prior to proceeding with fabrication of the work affected.
- E. The review of the Shop drawings is limited to design intent only. No responsibility for a detailed check of information is assumed by the Architect by virtue of such approval.

1.11 INSPECTION AND QUALITY CONTROL

- A. All inspections and tests shall meet the requirements of IBC 2015.
- B. Contractor shall provide effective full time quality control over all fabrication and erection activities.
- C. As directed by Architect, owner's testing agency may inspect the maintenance of a quality control program including spot checking weldments and welding procedures in accordance with A.W.S. standards.
- D. Inspection by owner's testing agency is not intended to be comprehensive or complete. Full responsibility for quality control shall remain with the Contractor.

- E. The owner shall employ an inspection agency approved by the engineer to inspect and test the shop and field welding and screw connections of the light-gauge system components to themselves and to the metal supporting structure. See paragraph 3.7.

1.12 REGULATORY REQUIREMENTS

- A. Conform to applicable provisions of the Building Code listed in section 01 4100.

1.13 DELIVERY, STORAGE AND HANDLING

- A. Protect metal framing units from rusting and damage.
- B. Deliver in manufacturer's unopened containers or bundles, color identified with metal thickness and grade of steel.
- C. Store off ground in a dry ventilated space or protect with suitable waterproof coverings.
- D. Handle and lift components and prefabricated panels in a manner to prevent, damage, distortion, and undue stress.

PART 2 - PRODUCTS

2.0 LEED v4 REQUIREMENTS

- A. Recycled Content: Provide steel at least 25 percent post-consumer recycled content
- B. Regional Materials: Provide minimum 25 percent of steel manufactured and of primary raw materials extracted or recovered within 100 mile radius of Project Site.

2.1 MANUFACTURERS

- A. Light-gauge metal framing
 - 1. Marino\Ware
 - 2. ClarkDietrich Building Systems
 - 3. Or approved equal
- B. Unistrut framing
 - 1. Unistrut
 - 2. Kindorf
 - 3. B-Line

2.2 COLD-FORMED STEEL STUDS, FLOOR AND CEILING RUNNERS, JOISTS, LINTEL ASSEMBLIES, RAFTERS AND TRUSSES

- A. Product Standard: ASTM C 955; "C" shaped load bearing framing members. All cold-formed framing shall be galvanized.
- B. All galvanized studs 12, 14, and 16 gauge and all joists shall be formed from steel that corresponds to the minimum requirements of ASTM A653, SQ, Grade 50, Class 1 with a minimum yield of 50,000 psi.

- C. All galvanized studs less than or equal to 18 gauge; all galvanized track, bridging, end closures and accessories shall be formed from steel that corresponds to the requirements of ASTM A653, CQ, Grade 33, with a minimum yield of 33,000 psi.
- D. All galvanized studs, joists, track, bridging and accessories shall be formed from steel having a G-60 galvanized coating meeting the requirements of ASTM A653.
- E. Galvanizing Repair Paint: High zinc-dust content paint for repair of damaged galvanized surfaces complying with ASTM A780-80.
- F. All unistrut framing shall be formed from galvanized steel conforming to ASTM A653, grade 33, G90.

2.3 PROPERTIES

- A. The physical and structural properties listed by MARINO /WARE shall be considered the minimum permitted for all light-gauge metal framing members. Specifically, the following minimum properties, calculated in accordance with the latest A.I.S.I. Specification shall be provided: Ix (in.4), Area (in.2), rx(in.), Fy(KSI), Resisting Moment (in.-lb). Follow ASTM A446-72, latest edition.
- B. All structural studs shall be configured such that the maximum web punching shall be one (1) inch diameter holes at 30 inches on center. All structural joists, lintel assemblies, rafters and trusses shall have no pre-punched holes.
- C. The physical and structural properties listed by Unistrut shall be considered the minimum permitted for all Unistrut framing members. Specifically, the following minimum properties, calculated in accordance with the latest A.I.S.I. Specification shall be provided: Ix(in.4), Area (in.2), rx(in.), Fy(KSI), Resisting Moment (in.-lb).

2.4 SUBSTITUTIONS

- A. The Architect must approve any substitutions in writing ten (10) days prior to bid date.

2.5 ACCESSORIES

- A. Provide standard steel runners (tracks), slip tracks, slide blocks, blocking, lintels, clip angles, shoes, reinforcements, and accessories.
- B. Accessories shall be as recommended by framing manufacturer for applications indicated and as required to provide complete and substantial framing system.
- C. Unistrut fittings shall be punch press made from hot rolled, pickled and oiled steel plates, strip or coil conforming to ASTM A36, A575, A576, or A635.

2.6 FASTENERS

- A. Fasteners shall be of sufficient size to ensure strength of connection. Minimum edge distance shall be 1/2" for all screws and pins and 1" for all bolts.
- B. Steel Drill Screws: Screws shall have rust inhibitive coating (cadmium or zinc plating, ASTM B 766) suitable for the installation in which they are being used.
- C. Power Actuated Drive Pins: In accordance with FF-P-395.

- D. Expansion Bolts: In accordance with FF-S-325, except lead, fiber, and plastic shields are not permitted.
- E. Unistrut nuts shall be of rectangular case hardened steel manufactured with toothed grooves to prevent any movement of the bolt and nut within the framing member.
- F. Unistrut bolts and screws shall meet or exceed the requirements of ASTM A307.

2.7 FINISH TOUCH-UP

- A. Zinc Rich Paint: In accordance with ASTM A 780.
- B. Prime Paint: Similar to that used by framing manufacturer.

2.8 FABRICATION

- A. Framing components may be prefabricated into panels for erection. Fabricate panels plumb, square, true to line and braced against racking.
- B. With each type of metal framing required, provide standard steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories recommended by the manufacturer and as shown on drawings for applications indicated and required to provide a complete and substantial metal framing system.
- C. Cut all framing components squarely or at an angle to fit squarely against abutting members. Hold members firmly in position until properly fastened. Wire tying of framing components in structural applications is not permitted. Torch cutting of load bearing studs is not permitted. Slicing of load bearing members is not permitted.
- D. The final configuration of all metal stud truss diagonals shall be coordinated with the mechanical equipment and ductwork layout. See mechanical / electrical / architectural / and structural drawings for location and extent.
- E. Perform shop and field welding in accordance with AWS D1.1, AWS D1.3, and AISI Manual Section 4.2.
- F. Provide insulation equal to that specified elsewhere in all double jamb studs and double header members which will not be accessible to the insulation contractor. After fabrication and installation.

2.9 GYPSUM SHEATHING

- A. Gypsum Sheathing Board with Water-Resistant Core: Gypsum board designed as an exterior substrate for a weather barrier, consisting of noncombustible water-resistant core (essentially gypsum) surfaced with glass mats on face and back, partially or completely embedded in core, and with unsurfaced and square and vee edges. Comply with ASTM C1177, and requirements indicated below:
 - 1. Type: Regular or Dens Glass Gold by Georgia Pacific or approved equal.
 - 2. Edge and End Configuration: Square on vertical face/angle on horizontal face.
 - 3. Thickness: 1/2 inch
 - 4. Size: 4 feet by 8 feet.

B. Air infiltration barrier

1. Tyvek" house wrap.
2. Asphalt saturated organic felt complying with ASTM D 226, Type 1 (No. 15 asphalt felt) unperforated.

C. Glass-Fiber Sheathing Tape for Glass-Mat Gypsum Sheathing: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads per inch, for use with silicone emulsion sealant to seal joints in glass-mat gypsum sheathing board. Sheathing Tape shall be the type recommended by sheathing and tape manufacturers, with a history of successful in-service use.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Perma-Tite Tape--PGM 207A; PermaGlas-Mesh, Inc.
 - b. Quik-Tape; Quik-Tape, Inc.

D. Silicone Emulsion Sealant for Glass-Mat Gypsum Sheathing: Product complying with ASTM C 834, compatible with sheathing tape and gypsum sheathing, recommended by sheathing and tape manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

1. Product: Subject to compliance with requirements, provide "Elmer's Siliconized Acrylic"

PART 3 - EXECUTION

3.1 VERIFICATION OF CONDITIONS

- A. Inspection: Prior to installation, inspect work of all other trades. Verify that all such work is complete and accurate to the point where this installation may properly commence in strict accordance with the contract documents and approved framing shop drawings.

3.2 DISCREPANCIES

- A. Immediately notify Architect of all discrepancies.
- B. Do not proceed with installation in areas of discrepancies until such discrepancy has been fully resolved.

3.3 INSTALLATION - STUD SYSTEM

A. General:

1. Erect framing and panels plumb, level and square in strict accordance with the approved shop drawings and ASTM C 1007.
2. Temporary bracing shall be provided until erection is completed.

- B. Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Securely anchor abutting pieces of track to a common structural element of butt-welded or spliced together. Secure tracks to supporting structure as recommended by stud manufacturer for type of construction involved, except do not exceed 16" on center spacing for nail or power-driven fasteners, nor 12" on center for other types of attachment. Provide fasteners at corners and ends of tracks.

1. Maximum penetration into the concrete structure shall be 3/4", or structure shall be x-rayed in order to avoid hitting any post-tensioning tendons.

- C. Stud Placement: Secure Placement: Secure studs to top and bottom runner tracks by fastening at both inside and outside flanges by welding.
1. Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements. Where stud system is attached to the building frame, shim between frame and stud as required.
 2. Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.
 3. Provide double studs at panel intersections, corner, doors, windows, control joints, etc.
- D. Reinforced Framing:
1. Install supplementary framing, blocking and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim, and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with stud manufacturer's recommendation and industry standards in each case, considering weight or loading resulting from item supported.
 2. Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than 2 are either shown on the contract drawings or indicated in manufacturer's instructions. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoe or by welding; space jack studs same as full-height studs of wall. Connect jamb studs together by straps or welds not more than 4'-0" o.c. vertically on both faces of studs.
 3. Frame both sides of expansion and control joints with separate studs; do not bridge the joint with components of stud system.
 4. Install horizontal stiffeners in stud system, space at not more than 4'-0" o.c. vertically. Horizontal bracing shall consist of 1-1/2" wide by 16 gauge galvanized u-bracing attached to studs with 1" x 1" x 16 gauge clip angle and (4) - 10 gage Tek Screws.
 5. Solid bridging is to be placed at each end of wall, adjacent to wall openings, and at other locations in the stud system as required by the contract documents. Solid bridging shall consist of full depth. 16 gauge galvanized track attached to studs with 1" x 1" x 16 gauge clip angles and (4) - 10 gage Tek Screws.
- E. Holes that are field cut into steel framing members shall be within the limitations of the product and its design. Provide reinforcement where holes are cut through load bearing members in accordance with the manufacturer's recommendations for the product
- F. Align axially loaded members vertically to allow for full transfer of loads. Vertical alignment shall be maintained at floor / wall intersections unless alternate provisions for transfer are made.

3.4 INSTALLATION - JOISTS, LINTEL ASSEMBLIES, RAFTERS AND TRUSSES

- A. Install level and plumb, complete with bracing and reinforcing as indicated on drawings. Provide not less than 1-1/2" end bearing and 3-1/2" bearing at intermediate supports. Provide full bearing surface shims as required for leveling.
- B. Reinforce ends with end clip, steel hangers, steel angle clips, steel stud section, or as otherwise recommended by joist manufacturer.
- C. Where required, reinforce joists at interior supports with single short length of joist section located directly over interior support, snap on shoe, 30% side piece lapped reinforcement, or other method recommended by joist manufacturer.
- D. Secure joists to interior support systems to prevent lateral movement of bottom flange.

- E. Locate joists directly over bearing studs or provide a load distribution member to transfer loads.
- F. Provide web stiffeners at reaction points, and at points concentrated loads.
- G. Install joists with web area perpendicular to bearing surface.
- H. Provide bridging, either steel strap or solid, as shown on the Design calculations.
- I. Provide additional joists under parallel partitions where partition length exceeds 1/2 of joist span.
- J. Provide additional framing around floor/roof openings which are larger than joist spacing.
- K. Provide end blocking at all bearing walls where joists ends are not otherwise restrained from rotation.
- L. Build joist ends solidly into masonry construction prior to placing load on joist.
- M. Install bridging and reinforcement similar to stud installation.
- N. Limitations for field cut holes shall be per paragraph 2.3.B above.

3.5 INSTALLATION – UNISTRUT

- A. Installation shall be accomplished by a fully trained manufacturer authorized installer.
- B. Set Strut System components into final position true to lines, level and plumb, in accordance with approved shop drawings.
- C. Anchor material firmly in place. Tighten all connections to their recommended torques.

3.6 TOLERANCES

- A. Vertical alignment (plumbness) of studs shall be within 1/960 (1/8 inch in 10 ft.) of the span.
- B. Horizontal alignment (levelness) of walls shall be within 1/960 (1/8 inch in 10 ft.) of their respective lengths.
- C. Spacing of the studs shall be more than 1/8 inch from the designed spacing, provided that the cumulative error does not exceed the requirements of the finishing material.
- D. Squareness of the prefabricated panels shall be not more than 1/8 inch out of square within the length of that panel.
- E. Vertical alignment (plumbness) of trusses shall be within 1/50 of the height or 2 inches – whichever is less as required in AISI S214.

3.7 GYPSUM SHEATHING

- A. General: Install gypsum sheathing to comply with GA-253 and manufacturer's written instructions except as modified below.
- B. Cut boards at penetrations, edges, and other obstructions of the work; fit tightly against abutting construction, except provide a 3/8-inch setback where non-load-bearing construction abuts structural elements.

- C. Coordinate sheathing installation with flashing and joint sealant installation so these materials are installed in the sequence and manner that prevent exterior moisture from passing through completed exterior wall assembly.
- D. Apply fasteners so screw heads bear tightly against face of sheathing boards but do not cut into facing.
- E. Do not bridge building expansion joints with sheathing; cut and space edges to match spacing of structural support elements.
- F. Vertical Installation: Install 48-inch- wide gypsum sheathing boards vertically with vertical edges centered over flanges of steel studs. Abut ends and edges of each board with those of adjacent boards. Screw-attach boards at perimeter and within field of board to each steel stud at approximately 8 inches o.c. and set back a minimum of 3/8 inch from edges and ends of boards.
- G. Shear Walls:
 - 1. All exterior walls and some designated interior walls of this building are herein designated as shear walls.
 - 2. Gypsum sheathing on both faces of all shear walls shall be attached at all edges with 10 gage screws at 4" on center and at all interior studs with 10 gage screws at 8" on center.
 - 3. Provide blocking in all shear walls at unsupported edges of gypsum sheathing.
- H. All exterior walls shall have sheathing butt joints sealed with an approved urethane sealant.
- I. Air-Infiltration Barrier Application: Cover sheathing with air-infiltration barrier as follows:
 - 1. Apply glass-fiber sheathing tape to glass-mat gypsum sheathing board joints, and apply and trowel silicone emulsion sealant to embed sealant in entire face of tape. Apply sealant to exposed fasteners with a trowel so fasteners are completely covered. Seal other penetrations and openings.
 - 2. Apply asphalt-saturated organic felt horizontally with 2-inch overlap and 6-inch end lap; fasten to sheathing with corrosion-resistant staples.

3.9 INSPECTION

- A. Comply with inspection requirements of Section 01 4000, Quality Control Services.
- B. Inspect fabrication and installation for compliance with ASTM C 1007.
- C. Review Contractor's quality control program.
- D. Inspect shop and field welding of cold-formed metal framing components to each other and to structural metal framing, including compliance with AWS standards.
- E. These inspections shall include wall and truss plumbness, bridging & bracing, roof deck & drywall attachment, and other system components.

3.10 ADJUSTMENTS

- A. Finish Touch-Up: After installation, wire brush and clean scarred areas, welds, rust spots and other steel bared by fabrication and erection procedures.

- B. Touch-up surfaces using zinc rich paint on galvanized steel and paint equal to that used by the manufacturer on painted steel members.
- C. In areas where shop-painted surfaces are to be exposed, apply touch-up paint to blend into adjacent surfaces.

1.11 PROTECTION OF INSTALLED WORK

- A. Do not apply loads until bridging, bracing, strapping, and web reinforcement are securely in place.
- B. Do not overload the floor system during construction. Prevent concentrated floor or roof loads, such as stacking of heavy building materials, unless adequate additional means for carrying these loads are provided.
- C. If diaphragm rated components are used in lieu of bridging, then do not apply loading until their installation. If components on one side only, then the other flanges should be bridged with suitable bridging. Bridging may be removed or left in place when diaphragm rated components are installed.

1.12 CONTRACTOR'S RESPONSIBILITY

- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project, and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION 05 4000

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SECTION 05 50 00

METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Steel framing and supports for countertops.
2. Steel tube reinforcement for low partitions.
3. Steel framing and supports for mechanical and electrical equipment.
4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
5. Elevator machine beams, hoist beams, and divider beams.
6. Steel shapes for supporting elevator door sills.
7. Slotted channel framing.
8. Metal ladders.
9. Elevator pit sump covers.
10. Metal bollards.
11. Loose bearing and leveling plates for applications where they are not specified in other Sections.

- B. Products furnished, but not installed, under this Section include the following:

1. Loose steel lintels.
2. Anchor bolts, steel pipe sleeves, slotted-channel inserts, and wedge-type inserts indicated to be cast into concrete or built into unit masonry.
3. Steel weld plates and angles for casting into concrete for applications where they are not specified in other Sections.

- C. Related Requirements:

1. Section 03 30 00 "Cast-in-Place Concrete" for installing anchor bolts, steel pipe sleeves, slotted-channel inserts, wedge-type inserts, and other items cast into concrete.
2. Section 05 12 00 "Structural Steel Framing."

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.

- B. Coordinate installation of metal fabrications that are anchored to or that receive other work. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves,

concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Nonslip aggregates and nonslip-aggregate surface finishes.
2. Fasteners.
3. Shop primers.
4. Shrinkage-resisting grout.
5. Slotted channel framing.
6. Metal bollards.
7. For products having recycled content, indicate postconsumer and preconsumer recycled content.

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for the following:

1. Steel framing and supports for countertops.
2. Steel tube reinforcement for low partitions.
3. Steel framing and supports for mechanical and electrical equipment.
4. Steel framing and supports for applications where framing and supports are not specified in other Sections.
5. Elevator machine beams, hoist beams, and divider beams.
6. Steel shapes for supporting elevator door sills.
7. Metal ladders.
8. Elevator pit sump covers.
9. Metal bollards.
10. Loose steel lintels.

C. Delegated-Design Submittal: For ladders, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

D. Research Reports: For post-installed anchors.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls, floor slabs, decks, and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design ladders.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS

- A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- D. Rolled-Steel Floor Plate: ASTM A786/A786M, rolled from plate complying with ASTM A36/A36M or ASTM A283/A283M, Grade C or D.
- E. Steel Tubing: ASTM A500/A500M, cold-formed steel tubing.
- F. Steel Pipe: ASTM A53/A53M, Standard Weight (Schedule 40) unless otherwise indicated.
- G. Slotted Channel Framing: Cold-formed metal box channels (struts) complying with MFMA-4.
 1. Size of Channels: 1-5/8 by 1-5/8 inches.
 2. Material: Galvanized steel, ASTM A653/A653M, commercial steel, Type B, with G90 coating; 0.108-inch (nominal 12-gage) thickness.

2.3 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- C. Stainless Steel Bolts and Nuts: Regular hexagon-head annealed stainless steel bolts, ASTM F593; with hex nuts, ASTM F594; and, where indicated, flat washers; Alloy Group 1.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
 - 1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.
- E. Anchors, General: Capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing in accordance with ASTM E488/E488M, conducted by a qualified independent testing agency.
- F. Cast-in-Place Anchors in Concrete: Either threaded or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A47/A47M malleable iron or ASTM A27/A27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F2329/F2329M.
- G. Post-Installed Anchors for Concrete and Masonry: Comply with Section 05 05 19 "Post-Installed Anchors in Concrete & Masonry."
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.
- H. Slotted-Channel Inserts: Cold-formed, hot-dip galvanized-steel box channels (struts) complying with MFMA-4, 1-5/8 by 7/8 inches by length indicated with anchor straps or studs not less than 3 inches long at not more than 8 inches o.c. Provide with temporary filler and tee-head bolts, complete with washers and nuts, all zinc-plated to comply with ASTM B633, Class Fe/Zn 5, as needed for fastening to inserts.

2.4 MISCELLANEOUS MATERIALS

- A. Shop Primers: Provide primers that comply with Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
- B. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- C. Shrinkage-Resistant Grout: Factory-packaged, nonmetallic, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- D. Concrete: Comply with requirements in Section 03 30 00 "Cast-in-Place Concrete" for normal-weight, air-entrained concrete with a minimum 28-day compressive strength of 3000 psi.

2.5 FABRICATION, GENERAL

- A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.
- B. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- D. Form exposed work with accurate angles and surfaces and straight edges.
- E. Weld corners and seams continuously to comply with the following:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.
- I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.
- J. Where units are indicated to be cast into concrete or built into masonry, equip with integrally welded steel strap anchors, 1/8 by 1-1/2 inches, with a minimum 6-inch embedment and 2-inch hook, not less than 8 inches from ends and corners of units and 24 inches o.c., unless otherwise indicated.

2.6 MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.
- B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.
 - 1. Fabricate units from slotted channel framing where indicated.
 - 2. Furnish inserts for units installed after concrete is placed.

- C. Galvanize miscellaneous framing and supports located in exterior construction and where indicated.
- D. Prime miscellaneous framing and supports where they will be left exposed when the Project is complete.

2.7 METAL LADDERS

- A. General:
 - 1. Comply with ANSI A14.3, except for elevator pit ladders.
 - 2. For elevator pit ladders, comply with ASME A17.1/CSA B44.
- B. Steel Ladders:
 - 1. Space siderails 18 inches apart unless otherwise indicated.
 - 2. Siderails: Continuous, 3/8-by-2-1/2-inch steel flat bars, with eased edges.
 - 3. Rungs: 3/4-inch-diameter, steel bars.
 - 4. Fit rungs in centerline of siderails; plug-weld and grind smooth on outer rail faces.
 - 5. Provide nonslip surfaces on top of each rung, either by coating rung with aluminum-oxide granules set in epoxy-resin adhesive or by using a type of manufactured rung filled with aluminum-oxide grout.
 - 6. Support each ladder at top and bottom and not more than 60 inches o.c. with welded or bolted steel brackets.
 - 7. Prime interior ladders, including brackets and fasteners.
- C. Retractable Elevator Pit Ladder: Retractable elevator pit ladder that, when extended, complies with OSHA and ASME A17.1; pull pin with T-grip handle.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. Smart Elevator Tech, LLC; Retractable Ladder.

2.8 ELEVATOR PIT SUMP COVERS

- A. Fabricate from 1/8-inch rolled-steel floor plate with four 1-inch-diameter holes for water drainage and for lifting.
- B. Provide steel angle supports unless otherwise indicated.

2.9 METAL BOLLARDS

- A. Fabricate metal bollards from Schedule 40 steel pipe.
 - 1. Cap bollards with 1/4-inch-thick, steel plate with flat top.
- B. Fabricate bollards with 3/8-inch-thick, steel baseplates for bolting to concrete slab. Drill baseplates at all four corners for 3/4-inch anchor bolts.
 - 1. Where bollards are to be anchored to sloping concrete slabs, angle baseplates for plumb alignment of bollards.

- C. Prime steel bollards with primers specified in Division 09 painting Sections.

2.10 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction. Drill plates to receive anchor bolts and for grouting.
- B. Galvanize bearing and leveling plates.

2.11 LOOSE STEEL LINTELS

- A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.
- B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 8 inches unless otherwise indicated.
- C. Galvanize and prime loose steel lintels installed in exterior wall construction.
- D. Prime interior loose steel lintels where they will remain exposed after completion of the Project.

2.12 STEEL WELD PLATES AND ANGLES

- A. Provide steel weld plates and angles not specified in other Sections, for items supported from concrete construction as needed to complete the Work. Provide each unit with no fewer than two integrally welded steel strap anchors for embedding in concrete.

2.13 GENERAL FINISH REQUIREMENTS

- A. Finish metal fabrications after assembly.
- B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.14 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A153/A153M for steel and iron hardware and with ASTM A123/A123M for other steel and iron products.
 - 1. Galvanize miscellaneous metal fabrications specified in this Section where exposed to exterior or embedded in exterior roof or wall construction unless otherwise indicated.
 - 2. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean galvanized surfaces of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

- C. Shop prime iron and steel items unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.
 - 1. Shop prime with primers specified in Section 09 91 13 "Exterior Painting" and in Section 09 91 23 "Interior Painting."
- D. Preparation for Shop Priming: Prepare surfaces to comply with requirements indicated below:
 - 1. Exterior Items: SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. Other Steel Items: SSPC-SP 3, "Power Tool Cleaning."
 - 3. Galvanized-Steel Items: SSPC-SP 16, "Brush-off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals."
- E. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
- C. Field Welding: Comply with the following requirements:
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove welding flux immediately.
 - 4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.
- D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.
- E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLATION OF MISCELLANEOUS FRAMING AND SUPPORTS

- A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

3.3 INSTALLATION OF METAL BOLLARDS

- A. Fill metal-capped bollards solidly with concrete and allow concrete to cure seven days before installing.
- B. Anchor bollards to existing construction with anchor bolts. Provide four 3/4-inch bolts at each bollard unless otherwise indicated.
 - 1. Embed anchor bolts at least 4 inches in concrete.

3.4 INSTALLATION OF BEARING AND LEVELING PLATES

- A. Clean concrete and masonry bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with shrinkage-resistant grout. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.5 REPAIRS

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 50 00

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SECTION 05 51 13

METAL PAN STAIRS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Preassembled steel stairs with concrete-filled treads.
 - 2. Steel tube railings and guards attached to metal stairs.
 - 3. Steel tube handrails attached to walls adjacent to metal stairs.
 - 4. Railing gates at the level of exit discharge.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written instructions to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for metal stairs, railings, and guards.
 - 1. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, blocking for attachment of wall-mounted handrails, and items with integral anchors, that are to be embedded in concrete or masonry.
 - 2. Deliver such items to Project site in time for installation.
- C. Coordinate locations of hanger rods and struts with other work so they do not encroach on required stair width and are within fire-resistance-rated stair enclosure.
- D. Schedule installation of railings and guards so wall attachments are made only to completed walls.
 - 1. Do not support railings and guards temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For metal pan stairs and the following:
 - 1. Abrasive nosings.
 - 2. Shop primer products.
 - 3. Handrail wall brackets.

4. Grout.
5. For products having recycled content, indicate postconsumer and preconsumer recycled content.

B. Shop Drawings:

1. Include plans, elevations, sections, details, and attachments to other work.
2. Indicate sizes of metal sections, thickness of metals, profiles, holes, and field joints.
3. Include plan at each level.
4. Indicate locations of anchors, weld plates, and blocking for attachment of wall-mounted handrails.

C. Samples: For each type and finish of nosing.

D. Delegated-Design Submittal: For stairs, railings and guards,, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For professional engineer's experience with providing delegated-design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.

B. Welding certificates.

C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Fabricator of products.

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3/D1.3M, "Structural Welding Code - Sheet Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification.

1. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers.
2. Protect steel members and packaged materials from corrosion and deterioration.
3. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures.
 - a. Repair or replace damaged materials or structures as directed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design stairs, railings and guards,, including attachment to building construction.
- B. Structural Performance of Stairs: Metal stairs shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Uniform Load: 100 lbf/sq. ft.
 - 2. Concentrated Load: 300 lbf applied on an area of 4 sq. in.
 - 3. Uniform and concentrated loads need not be assumed to act concurrently.
 - 4. Stair Framing: Capable of withstanding stresses resulting from railing and guard loads in addition to loads specified above.
 - 5. Limit deflection of treads, platforms, and framing members to L/360 or 1/4 inch, whichever is less.
- C. Structural Performance of Railings and Guards: Railings and guards, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.
 - b. Infill load and other loads need not be assumed to act concurrently.

2.2 METALS

- A. Metal Surfaces: Provide materials with smooth, flat surfaces unless otherwise indicated. For components exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- D. Steel Tubing for Railings and Guards: ASTM A500/A500M (cold formed) or ASTM A513/A513M.
- E. Steel Pipe for Railings and Guards: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- F. Uncoated, Hot-Rolled Steel Sheet: ASTM A1011/A1011M, either commercial steel, Type B, or structural steel, Grade 30, unless another grade is required by design loads.

- G. Aluminum Extrusions: ASTM B221, Alloy 6063-T6.

2.3 ABRASIVE NOSINGS

- A. Extruded Units: Aluminum units with abrasive filler consisting of aluminum oxide, silicon carbide, or a combination of both, in an epoxy-resin binder. Fabricate units in lengths necessary to accurately fit openings or conditions.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. American Safety Tread Co., Inc.
 - b. Amstep Products.
 - c. Armstrong Products, Inc.
 - d. Balco; a CSW Industrials Company.
 - e. Granite State Casting Co.
 - f. Nystrom.
 - g. Upnovr, Inc.
 - h. Wooster Products Inc.
 2. Provide solid-abrasive units without ribs.
 3. Nosings: Square-back units, 1-7/8 inches wide, without lip.
- B. Provide anchors for embedding units in concrete, either integral or applied to units, as standard with manufacturer.
- C. Apply clear lacquer to concealed surfaces of extruded units set into concrete.

2.4 FASTENERS

- A. General: Provide zinc-plated fasteners with coating complying with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 12 for exterior use, and Class Fe/Zn 5 where built into exterior walls.
1. Select fasteners for type, grade, and class required.
- B. Fasteners for Anchoring Railings and Guards to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings and guards to other types of construction indicated and capable of withstanding design loads.
- C. Bolts and Nuts: Regular hexagon-head bolts, ASTM A307, Grade A; with hex nuts, ASTM A563; and, where indicated, flat washers.
- D. Anchor Bolts: ASTM F1554, Grade 36, of dimensions indicated; with nuts, ASTM A563; and, where indicated, flat washers.
- E. Post-Installed Anchors: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency. Comply with Section 05 05 19 "Post-Installed Anchors in Concrete & Masonry."

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.

2.5 MISCELLANEOUS MATERIALS

- A. Handrail Wall Brackets: Cast aluminum, center of rail 3-1/8 inches from face of wall.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Blum, Julius & Co., Inc.
 - b. The Wagner Companies.
- B. Welding Electrodes: Comply with AWS requirements.
- C. Shop Primers: Provide primers that comply with Section 09 91 23 "Interior Painting."
- D. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout; recommended by manufacturer for interior use; noncorrosive and nonstaining; mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION, GENERAL

- A. Provide complete stair assemblies, including metal framing, hangers, struts, railings and guards, clips, brackets, bearing plates, and other components necessary to support and anchor stairs and platforms on supporting structure.
 1. Join components by welding unless otherwise indicated.
 2. Use connections that maintain structural value of joined pieces.
- B. Assemble stairs, railings, and guards in shop to greatest extent possible.
 1. Disassemble units only as necessary for shipping and handling limitations.
 2. Clearly mark units for reassembly and coordinated installation.
- C. Cut, drill, and punch metals cleanly and accurately.
 1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
 2. Remove sharp or rough areas on exposed surfaces.
- D. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- E. Form exposed work with accurate angles and surfaces and straight edges.
- F. Weld connections to comply with the following:
 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove welding flux immediately.
 4. Weld exposed corners and seams continuously unless otherwise indicated.

5. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 - Completely sanded joint with some undercutting and pinholes okay.
- G. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.
 1. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts unless otherwise indicated.
 2. Locate joints where least conspicuous.

2.7 FABRICATION OF STEEL-FRAMED STAIRS

- A. NAAMM Stair Standard: Comply with NAAMM AMP 510, "Metal Stairs Manual," for Commercial Class, unless more stringent requirements are indicated.
- B. Stair Framing:
 1. Fabricate stringers of steel plates or steel channels.
 - a. Stringer Size: As required to comply with "Performance Requirements" Article.
 - b. Provide closures for exposed ends of channel and rectangular tube stringers.
 - c. Finish: Shop primed.
 2. Construct platforms of steel plate or channel headers and miscellaneous framing members as required to comply with "Performance Requirements" Article.
 - a. Provide closures for exposed ends of channel and rectangular tube framing.
 - b. Finish: Shop primed.
 3. Weld or bolt stringers to headers; weld or bolt framing members to stringers and headers. If using bolts, fabricate and join so bolts are not exposed on finished surfaces.
 4. Where stairs are enclosed by gypsum board assemblies, provide hanger rods or struts to support landings from floor construction above or below.
 - a. Locate hanger rods and struts where they do not encroach on required stair width and are within the fire-resistance-rated stair enclosure.
 5. Where masonry walls support metal stairs, provide temporary supporting struts designed for erecting steel stair components before installing masonry.
- C. Metal Pan Stairs: Form risers, subtread pans, and subplatforms to configurations shown from steel sheet of thickness needed to comply with performance requirements, but not less than 0.067 inch.
 1. Steel Sheet: Uncoated, hot-rolled steel sheet unless otherwise indicated.
 2. Directly weld metal pans to stringers; locate welds on top of subtreads where they will be concealed by concrete fill. Do not weld risers to stringers.
 3. Attach risers and subtreads to stringers with brackets made of steel angles or bars. Weld brackets to stringers and attach metal pans to brackets by welding, riveting, or bolting.
 4. Attach abrasive nosings to risers.
 5. At Contractor's option, provide stair assemblies with metal pan subtreads filled with reinforced concrete during fabrication.

6. Provide subplatforms of configuration indicated or, if not indicated, the same as subtreads. Weld subplatforms to platform framing.
 - a. Smooth Soffit Construction: Construct subplatforms with flat metal under surfaces to produce smooth soffits.

2.8 FABRICATION OF STAIR RAILINGS AND GUARDS

- A. Comply with applicable requirements in Section 05 52 13 "Pipe and Tube Railings."
- B. Fabricate railings and guards to comply with requirements indicated for design, dimensions, details, finish, and member sizes, including wall thickness of member, post spacings, wall bracket spacing, and anchorage, but not less than that needed to withstand indicated loads.
 1. Rails and Posts: Provide rails and posts in dimensions indicated on Drawings.
 2. Picket Infill: Provide pickets in dimensions indicated on Drawings.
 3. Gates: Form gates from steel tube of same size and shape as top rails, with infill to match guards. Provide with cam-type, self-closing hinges for fastening to wall and overlapping stop with rubber bumper to prevent gate from opening in direction opposite egress.
- C. Welded Connections: Fabricate railings and guards with welded connections.
 1. Fabricate connections that are exposed to weather in a manner that excludes water.
 - a. Provide weep holes where water may accumulate internally.
 2. Cope components at connections to provide close fit, or use fittings designed for this purpose.
 3. Weld all around at connections, including at fittings.
 4. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 5. Obtain fusion without undercut or overlap.
 6. Remove flux immediately.
 7. Finish welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 - Completely sanded joint, some undercutting and pinholes are okay as shown in NAAMM AMP 521.
- D. Form changes in direction of railings and guards by bending or by inserting prefabricated elbow fittings.
- E. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- F. Close exposed ends of railing and guard members with prefabricated end fittings.
- G. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated.
 1. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- H. Connect posts to stair framing by direct welding unless otherwise indicated.

- I. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnecting components and for attaching to other work.
 - 1. Furnish inserts and other anchorage devices for connecting to concrete or masonry work.
 - 2. For nongalvanized railings and guards, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves, except galvanize anchors embedded in exterior masonry and concrete construction.
 - 3. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 1-1/2-inch clearance from inside face of handrail to finished wall surface.

- J. Fillers: Provide fillers made from steel plate, or other suitably crush-resistant material, where needed to transfer wall bracket loads through wall finishes to structural supports.
 - 1. Size fillers to suit wall finish thicknesses and to produce adequate bearing area to prevent bracket rotation and overstressing of substrate.

2.9 FINISHES

- A. Finish metal stairs after assembly.
- B. Preparation for Shop Priming: Prepare uncoated, ferrous-metal surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."
- C. Apply shop primer to uncoated surfaces of metal stair components, except those with galvanized finishes and those to be embedded in concrete or masonry unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 - 1. Shop prime uncoated railings with primers specified in Section 09 91 23 "Interior Painting."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify elevations of floors, bearing surfaces and locations of bearing plates, and other embedments for compliance with requirements.
 - 1. For wall-mounted railings, verify locations of concealed reinforcement within gypsum board and plaster assemblies.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF METAL PAN STAIRS

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing metal stairs to in-place construction.
 - 1. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal stairs. Set units accurately in location, alignment, and elevation, measured from established lines and levels and free of rack.
- C. Install metal stairs by welding stair framing to steel structure or to weld plates cast into concrete unless otherwise indicated.
 - 1. Grouted Baseplates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates.
 - a. Clean bottom surface of plates.
 - b. Set plates for structural members on wedges, shims, or setting nuts.
 - c. Tighten anchor bolts after supported members have been positioned and plumbed.
 - d. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 - e. Promptly pack grout solidly between bearing surfaces and plates so no voids remain.
 - 1) Neatly finish exposed surfaces; protect grout and allow to cure.
 - 2) Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- D. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- E. Fit exposed connections accurately together to form hairline joints.
 - 1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations.
 - 2. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.
 - 3. Comply with requirements for welding in "Fabrication, General" Article.
- F. Place and finish concrete fill for treads and platforms to comply with Section 03 30 00 "Cast-in-Place Concrete."
 - 1. Install abrasive nosings with anchors fully embedded in concrete.
 - 2. Center nosings on tread width.

3.3 INSTALLATION OF RAILINGS AND GUARDS

- A. Adjust railing and guard systems before anchoring to ensure matching alignment at abutting joints with tight, hairline joints.
 - 1. Space posts at spacing indicated or, if not indicated, as required by design loads.
 - 2. Plumb posts in each direction, within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails and guards so variations from level for horizontal members and variations from parallel with rake of stairs for sloping members do not exceed 1/4 inch in 12 feet.
 - 4. Secure posts, rail ends, and guard ends to building construction as follows:
 - a. Anchor posts to steel by welding or bolting to steel supporting members.
 - b. Anchor handrail and guard ends to concrete and masonry with steel round flanges welded to rail and guard ends and anchored with post-installed anchors and bolts.

- B. Install railing gates level, plumb, and secure for full opening without interference.
 - 1. Attach hardware using tamper-resistant or concealed means.
 - 2. Adjust hardware for smooth operation.

- C. Attach handrails to wall with wall brackets.
 - 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
 - 2. Secure wall brackets to building construction as required to comply with performance requirements.

END OF SECTION 05 51 13

SECTION 05 52 13

PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Steel railings.

- B. Related Requirements:

- 1. Section 05 51 13 "Metal Pan Stairs" for steel tube railings associated with metal pan stairs.
- 2. Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting" for field painting of steel railings specified in this Section.

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data:

- 1. Manufacturer's product lines of mechanically connected railings.
- 2. Fasteners.
- 3. Post-installed anchors.
- 4. Handrail brackets.
- 5. Shop primer.
- 6. Nonshrink, nonmetallic grout.
- 7. Anchoring cement.

8. For products having recycled content, indicate postconsumer and preconsumer recycled content.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For delegated-design professional engineer.
- B. Welding certificates.
- C. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers, certifying that shop primers are compatible with topcoats.
- D. Research Reports: For post-installed anchors, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design railings, including attachment to building construction.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft.

- b. Infill load and other loads need not be assumed to act concurrently.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
 - 1. Provide type of bracket with flange tapped for concealed anchorage to threaded hanger bolt and that provides 2-1/4-inch clearance from inside face of handrail to finished wall surface.

2.3 STEEL RAILINGS

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Tubing: ASTM A500/A500M (cold formed) or ASTM A513/A513M, Type 5.
- D. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.
- E. Plates, Shapes, and Bars: ASTM A36/A36M.
- F. Cast Iron Fittings: Either gray iron, ASTM A48/A48M, or malleable iron, ASTM A47/A47M, unless otherwise indicated.

2.4 FASTENERS

- A. Fastener Materials:
 - 1. Ungalvanized-Steel Railing Components: Plated steel fasteners complying with ASTM F1941, Class Fe/Zn 5 for zinc coating.
 - 2. Hot-Dip Galvanized Railing Components: Type 304 stainless steel or hot-dip zinc-coated steel fasteners complying with ASTM A153/A153M or ASTM F2329/F2329M for zinc coating.
- B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction and capable of withstanding design loads.

- C. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.
 - 2. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.

- D. Post-Installed Anchors: Fastener systems with working capacity greater than or equal to the design load, according to an evaluation report acceptable to authorities having jurisdiction. Comply with Section 05 05 19 "Post-Installed Anchors in Concrete & Masonry."
 - 1. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941/F1941M, Class Fe/Zn 5, unless otherwise indicated.
 - 2. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless steel bolts, ASTM F593, and nuts, ASTM F594.

2.5 MISCELLANEOUS MATERIALS

- A. Handrail Brackets: Malleable iron, center of handrail 3-1/8 inches from face of railing or wall.
- B. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.
- C. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- D. Galvanizing Repair Paint: High-zinc-dust-content paint, complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- E. Shop Primers: Provide primers that comply with Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."
- F. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout, complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- G. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
 - 1. Water-Resistant Product: At exterior locations and where indicated on Drawings, provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.6 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.
 - 1. Clearly mark units for reassembly and coordinated installation.

2. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately.
1. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated.
 2. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water.
1. Provide weep holes where water may accumulate.
 2. Locate weep holes in inconspicuous locations.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded or nonwelded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 2. Obtain fusion without undercut or overlap.
 3. Remove flux immediately.
 4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 welds; good appearance, completely sanded joint, some undercutting and pinholes okay
- I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
1. Fabricate splice joints for field connection, using an epoxy structural adhesive, if this is manufacturer's standard splicing method.
- J. Form changes in direction by bending or by inserting prefabricated elbow fittings.
- K. Bend members in jigs to produce uniform curvature for each configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- L. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.
- M. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- N. Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
1. At brackets and fittings fastened to plaster or gypsum board partitions, provide crush-resistant fillers or other means to transfer loads through wall finishes to structural supports and prevent bracket or fitting rotation and crushing of substrate.

- O. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work.
 - 1. Fabricate anchorage devices capable of withstanding loads imposed by railings.
 - 2. Coordinate anchorage devices with supporting structure.

- P. For railing posts set in concrete, provide stainless steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.7 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 - 1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
 - 2. Comply with ASTM A123/A123M for hot-dip galvanized railings.
 - 3. Comply with ASTM A153/A153M for hot-dip galvanized hardware.
 - 4. Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
 - 5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

- C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner and as follows.
 - 1. Comply with SSPC-SP 16.

- D. For nongalvanized-steel railings, provide nongalvanized ferrous-metal fittings, brackets, fasteners, and sleeves; however, hot-dip galvanize anchors to be embedded in exterior concrete or masonry.

- E. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with requirements indicated below:
 - 1. Exterior Railings: SSPC-SP 6/NACE No. 3.
 - 2. Other Railings: SSPC-SP 3.

- F. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1 for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
 - 1. Shop prime uncoated railings with primers specified in Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

- A. Perform cutting, drilling, and fitting required for installing railings.
 - 1. Fit exposed connections together to form tight, hairline joints.
 - 2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
 - 3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
 - 4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- C. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- D. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Use wood blocks and padding to prevent damage to railing members and fittings. Seal recessed holes of exposed locking screws, using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article, whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve, extending 2 inches beyond joint on either side; fasten internal sleeve securely to one side; and locate joint within 6 inches of post.

3.4 ANCHORING POSTS

- A. Use stainless steel pipe sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink,

nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.

- B. Leave anchorage joint exposed with anchoring material flush with adjacent surface.
- C. Anchor posts to metal surfaces with flanges, angle type, or floor type, as required by conditions, connected to posts and to metal supporting members as follows:
 - 1. For steel railings, weld flanges to post and bolt to metal supporting surfaces.

3.5 ATTACHING RAILINGS

- A. Attach handrails to walls with wall brackets. Provide brackets with 2-1/4-inch clearance from inside face of handrail and finished wall surface.
 - 1. Use type of bracket with flange tapped for concealed anchorage to threaded hanger bolt.
 - 2. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- B. Secure wall brackets to building construction as follows:
 - 1. For concrete and solid masonry anchorage, use drilled-in expansion shields and hanger or lag bolts.
 - 2. For hollow masonry anchorage, use toggle bolts.
 - 3. For steel-framed partitions, fasten brackets directly to steel framing or concealed steel reinforcements, using self-tapping screws of size and type required to support structural loads.

3.6 CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION 05 52 13

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 06 - WOOD, PLASTICS, AND COMPOSITES

06 05 73	WOOD TREATMENT
06 10 00	ROUGH CARPENTRY
06 15 33	PATIO DECKING
06 16 00	SHEATHING
06 17 53	SHOP-FABRICATED WOOD TRUSSES
06 18 00	GLUED-LAMINATED CONSTRUCTION
06 20 13	EXTERIOR FINISH CARPENTRY
06 20 23	INTERIOR FINISH CARPENTRY
06 41 13	WOOD-VENEER-FACED ARCHITECTURAL CABINETS
06 41 16	PLASTIC-LAMINATE-CLAD ARCHITECTURAL CABINETS
06 42 14	STILE AND RAIL WOOD PANELING
06 46 00	WOOD TRIM
06 63 00	DECORATIVE PLASTIC RAILINGS
06 64 00	PLASTIC PANELING
06 65 00	PLASTIC SIMULATED WOOD TRIM

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SECTION 06 0573

WOOD TREATMENT

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Preservative Pressure Treatment
- B. Fire Retardant Pressure Treatment

1.2 RELATED SECTIONS

- A. Section 06 1000 Rough Carpentry - All Structural Wood Framing & Sheathing
- B. Section 06 1600 Sheathing
- C. Section 06 1800 Glue Laminated Construction

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
 - 1. ASTM E 84, Test for Surface Burning Characteristics of Building Materials (also known as UL Test 723 and NFPA 225)
 - 2. ASTM D 3201 Standard Test Method for Hygroscopic Properties of Fire-Retardant Wood and Wood Base Products.
- B. American Wood Preservers Association (AWPA):
 - 1. AWPA C 2, Lumber, Timber, Bridge Ties & Mine ties – Preservative Treatment by Pressure Processes
 - 2. AWPA C 9, Plywood Preservative Treatment by Pressure Processes
 - 3. AWPA C 20, Structural Lumber, Fire-Retardant Pressure Treatment
 - 4. AWPA C 27, Plywood, Fire-Retardant Pressure Treatment
 - 5. AWPA C-28, Structural Glue Laminated Members and Laminations Before Gluing, Pressure Treatment.
- C. American Wood Preservers Bureau (AWPB):
 - 1. AWPB LP-22, Softwood Lumber, Timber and Plywood for Ground Contact Use: Pressure Treated with Water-Borne Preservatives
- D. American Institute of Timber Construction
 - 1. AITC 109, Standard for Preservative Treatment of Structural Glued-Laminated Timber
- E. APA – American Plywood Association
 - 1. APA J20, Grades and Specifications

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 2. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 3. For fire-retardant treatments, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 4. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 5. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

1.5 INFORMATIONAL SUBMITTALS

- A. Certification: Statement indicating treated materials have been dried after treatment to maximum 19 percent moisture content.
- B. Certification of Preservative Treatment: Statement of compatibility with metal connectors.

1.6 QUALITY ASSURANCE

- A. Quality mark preservative treated materials for retention in accord with AWPB specified standards. Where exposed in finished Work delete marks and provide certification.
- B. Kiln-Dry waterborne treated products to a moisture not to exceed 19 percent.
- C. Kiln-Dry treated Glue Laminated timber and decking to maximum 14 percent moisture content.
- D. Mark fire-retardant treated materials per Underwriters Laboratories.
- E. Increase required stress ratings by 10 percent for required fire-retardant treated wood.
- F. Processing: Prevent sticker marks on wood products which will be exposed. Treat wood products prior to lamination, except plywood.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Store and handle treated materials in accord with instructions of treater. Store and handle plywood in accord with APA J20.
- B. Protect dried materials against humidity and moisture during storage and erection. Do not allow moisture content to exceed that indicated.
- C. Ensure fire retardant treated materials are protected from exposure to precipitation and moisture. Exposure may destroy rating prior to and after installation.

1.8 ENVIRONMENTAL CONDITIONS

- A. Temperature: Do not treat materials at temperatures less than 40 degrees F.

PART 2 – PRODUCTS

2.1 PRESERVATIVE TREATMENT MATERIALS

- A. General: Where lumber or plywood is indicated as preservative-treated wood or is specified herein to be treated, comply with applicable requirements of AWWA Standards C2 (Lumber) and C9 (Plywood). Mark each treated item with the AWPB or SPIB Quality Mark Requirements.
- B. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2 for interior construction not in contact with the ground, Use Category UC3b for exterior construction not in contact with the ground, and Use Category UC4a for items in contact with the ground.
1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.
- C. Moisture Content: After treatment, kiln-dry lumber and plywood to a maximum water content of 19% and 15% respectively.
- D. Complete fabrication of treated items prior to treatment, where possible. If cut after treatment, coat cut surfaces to comply with AWWA. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.
- E. Where preservative treatment is indicated for glue laminated lumber, pressure treat lumber prior to gluing, in accordance with AWWA. Kiln dry to not more than 19% moisture content after treatment, and discard pieces which have bowed, warped, twisted or checked to extent of causing a detrimental result in work.
- F. Laminated wood decking shall be pressure treated per AWWA C28 after laminating, dressing, sanding, and end-cutting each member to final size and shape. For members which are too large for pressure treatment, laminate members from preservative treated lumber. After dressing and end-cutting each member to final size and shape, apply a heavy brush coat of same (or compatible) treatment to cut surfaces (wherever cut to a depth of more than 1/16").
- G. Locations: All lumber in contact with concrete, masonry, roofing or exterior, including but not limited to the following:
1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 3. All exterior wood framing members.
 4. Wood floor plates installed over concrete slabs directly in contact with earth.

2.2 FIRE-RETARDANT TREATMENT MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorizes having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
- B. Current Evaluation/Research Reports: Provide fire-retardant-treated wood for which a current model code evaluation/research report exists that is acceptable to authorities having jurisdiction and that evidences compliance of fire-retardant-treated wood for application indicated.
- C. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Use treatment that does not promote corrosion of metal fasteners.
 - 2. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
 - 3. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.
 - 4. Design Value Adjustment Factors: Treated lumber shall be tested according ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
- D. Moisture Content: After treatment, kiln-dry lumber, plywood, and glue laminated units to a maximum water content of 19%, 15% and 14% respectively.
- E. Climate Effects: No reduction shall take place in bending strength, stiffness, and fastener holding capacities below values published by manufacturer of chemical formulation that are based on tests by a qualified independent testing laboratory of treated wood products identical to those indicated for this Project under elevated temperature and humidity conditions simulating installed conditions.
- F. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
- G. Long term Effects: No corrosion of metal fasteners shall result from their contact with treated wood. No other form of degradation shall occur due to acid hydrolysis or other causes related to manufacture and treatment.
- H. Inspect each piece of treated lumber or plywood after drying and discard damaged or defective pieces.
- I. All F.R.T. lumber or sheathing in contact with other F.R.T. lumber or sheathing shall be treated with the same product. (All F.R.T. products shall be in contact with compatible F.R.T. products).

- J. Locations: Concealed and permanent wood within the building including blocking, grounds, wood studs, rafters, etc., wood trusses, and plywood roof sheathing. See drawings for further requirements.

PART 3 – EXECUTION

3.1 INSTALLATION – PRESERVATIVE AND FIRE-RETARDANT TREATED WOOD

- A. Incorporate treated products as specified in other Sections.
- B. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - 1. Use inorganic boron for items that are continuously protected from liquid water.
 - 2. Use copper naphthenate for items not continuously protected from liquid water.
- C. Use hot dipped galvanized fasteners per ASTM A653, Class G185 for attachment of treated products.
- D. Cover treated blocking with polyethylene sheet, tacking in place and fasten down 12- inches on either side, to prevent wash-off or staining adjacent materials.
- E. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION

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SECTION 06 10 00

ROUGH CARPENTRY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

1.2 SECTION INCLUDES

- A. Blocking and nailers; plates, sills and curbs
- B. Exterior wall framing
- C. Wood grounds
- D. Mounting panels
- E. Interior Partition Framing including bulkheads and soffits
- F. Floor, Ceiling, and Roof Framing
- G. Heavy Timber Roof Decking

1.3 RELATED WORK

- A. Section 03 3000 Cast in Place Concrete
- B. Section 04 2000 Unit Masonry
- C. Section 06 0573 Wood Treatment - All Structural Wood Framing & Sheathing
- D. Section 06 1600 Sheathing

- E. Division 23 Mechanical
- F. Division 26 Electrical

1.4 QUALITY ASSURANCE

- A. Lumber Grading Rules and Wood Species: Agencies, Bureaus and Lumber Associations certified by Board of Review, American Lumber Standards Committee or Canadian Lumber Standards Administrative Board.
- B. Grade Marks: Identify lumber by official grade mark.
- C. Optional Framing: Certain requirements of bracing, notching, lapping or nailing may be waived in lieu of engineered connectors. Code approval and performance of connectors must be submitted to the engineer for approval.

1.5 REFERENCES

A. ASTM – ASTM International

1. ASTM A 653 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
2. ASTM D 1761 Standard Test Methods for Mechanical Fasteners in Wood
3. ASTM D 3498 Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems
4. ASTM D 5456 Standard Specification for Evaluation of Structural Composite Lumber Products.
5. ASTM F 1667 Standard Specification for Driven Fasteners: Nails, Spikes, and Staples
6. ASTM D2559 Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions

B. American Forest and Paper Association

1. AFPA T01 National Design Specifications for Wood Construction
2. AFPA T05 Wood Structural Design Data
3. AFPA T11 Manual for Wood Frame Construction
4. AFPA WCD No. 1: Detail for Conventional Wood Frame Construction

C. APA – Engineered Wood Association

1. APA AFG Adhesives for Field-Gluing Plywood to Wood Framing
2. APA E30 Engineered Wood Construction Guide
3. APA E830 Fastener Loads for Plywood – Screws
4. APA PRL-501 Performance Standard for APA EWS Laminated Veneer Lumber

D. National Bureau of Standards (NBS): NBS PS 20 American Softwood Lumber Standard

1. HIST PS-20 American Softwood Lumber Standard

E. Wood Associations:

1. Southern Pine Inspection Bureau (SPIB)
2. Western Wood Products Association (WWPA)
3. West Coast Lumber Inspection Bureau (WCLIB)
4. National Lumber Grades Authority (NLGA)
5. Northeastern Lumber Manufacturers Association (NELMA)
6. Redwood Inspection Service (RIS)

F. American Wood Preservers Association

1. AWPA U1: Use Category System
2. AWPA C9: Pressure Treatment – Plywood
3. AWPA P5: Water Borne Preservative
4. AWPA C1: Pressure Treatment (General Requirements)

G. American Institute of Timber Construction

1. AITC 112 Standard for Tongue-And-Groove Heavy Timber Roof Decking

H. LEED v4

1. LEED v4 Credit Materials Conversion

1.6 SUBMITTALS

- A. Material Lists: Indicate selected wood species, stress ratings, grades and locations in the work.
- B. Manufacturers Literature: Types of rough hardware indicating size and material.
- C. Product Data: Engineered metal connectors, underlayment, insulating sheathing, air-infiltration barriers, construction adhesives; indicate locations.
- D. Samples: Rough hardware and fasteners for framing.
- E. Sustainable Design Submittals: Certifications of following criteria
 - 1. Dollar value of each distinct product specified to meet a LEED v4 Credit.
 - 2. Certified Wood – Provide “chain of custody” indicating origin of forest products, type of managed forest, and evidence of transfer to distributors.
 - 3. Low Emitting Materials – Identify product, generic type and its Volatile Organic Compounds (VOC) content, along with required limits for respective type of product.

1.7 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Protect materials from weather, humidity and moisture.
- B. Store materials 6 inches above ground on framework or blocking.
- C. Cover with waterproof covering, providing adequate air circulation.
- D. Protect sheet materials from broken and damaged surfaces and edges.

PART 2 – PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - 1. Factory mark each piece of lumber with grade stamp of grading agency.
 - 2. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - 3. Provide dressed lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
 - 1. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis

and demonstrated by comprehensive testing performed by a qualified independent testing agency.

2.2 MATERIALS, SOFTWOOD LUMBER

- A. Lumber dimensions indicated are nominal, actual dimensions per PS20.
- B. Surface four sizes (S4S), unless specified otherwise.
- C. Provide dry lumber with 19% maximum moisture content at time of dressing for 2" nominal thickness or less, unless otherwise indicated.

2.3 MATERIALS - SOFTWOOD DIMENSION LUMBER: PS-20

- A. Structural Joists, Studs and Plates: S Dry or MC 19
 - 1. Specie Group - Southern Pine (SPIB); Grade No. 2 KD
 - a. Design Values - (psi) Fb=750; E=1400,000 modulus; Fc=1250 parallel to grain
- B. Structural Timber (5"x5" and Larger): S Dry or MC 19
 - 1. Southern Pine (NLGA); Grade No. 1 Dense SR KD
 - a. Design Values - (psi) Fb=1550; E=1600,000 modulus; Fc=975 parallel to grain

2.4 MATERIALS - SOFTWOOD DIMENSION LUMBER: MISCELLANEOUS

- A. Specie/Grade: Any commercial softwood; Construction or No. 3 grade; S Dry or MC 19.
 - 1. Locations: Miscellaneous framing; blocking and nailers

2.5 MATERIALS – ENGINEERED WOOD PRODUCTS

- A. Low Emitting Materials: Provide wood and Agrifiber products which contain no added ureaformaldehyde resins.

2.6 ACCESSORIES - FASTENERS – SHEATHING

- A. Nails and staples: As recommended by APA; (See Execution for Size).
 - 1. Locations: Plywood sheathing to wood framing

2.7 ACCESSORIES - FASTENERS - ROUGH CARPENTRY

- A. Material and Size: Where rough carpentry is exposed to the weather, in ground contact or in areas of high relative humidity, all connection plates, angles, hangers, bolts, lag screws, nails, etc. shall be one of the following:
 - 1. Domestic steel shall be zinc plated or galvanized per ASTM A 153 or A653, class G185.
 - 2. Stainless steel shall conform to AISI Type 304.
- B. Common Nails: 8d for 1-inch thick wood; 12d for 2-inch thick; 40d for 3-inch thick; toe nailing increase by two sizes.

1. Locations: Attachment of wood to wood.
 - C. Lag Bolts/Screws: Minimum 1/2" diameter, with length 2 times material passed through.
 1. Locations: Attachment of assembled units to wood framing.
 - D. Wood Screws: 6" long TimberLok self-drilling screws by FastenMaster or approved equal.
 1. Locations: Attachment of assembled units to wood framing
 - E. Sheet Metal Screws: Self tapping #12 pan head, length 2 times material passed through.
 1. Locations: Attachment of wood products to light gauge (16) metal.
 - F. Nuts and bolts: 3/4", #20 thread, hex head, 1" longer than material penetrated. Use carriage bolts (square neck or finned) where head is later inaccessible or in hazardous location.
 1. Locations: Attachment of structural members to each other or substrate.
 - G. Plate Washers: Size to accommodate fastener, minimum 3/4" outside diameter.
 1. Locations: Bolts and nuts (all types), penetrating wood or fiber board products.
- 2.8 ACCESSORIES – SHIMS
- A. Material: Cedar shingles, slate, lead, galvanized steel or plastic.
- 2.9 ACCESSORIES – METAL FRAMING ANCHORS
- A. General: Provide galvanized steel framing anchors of structural capacity, type, and size required for installation of framing. Provide joist hangers, nail plates, post caps and base, metal cross bridging, framing anchors, L straps, T straps, header braces, plywood clips, etc., as indicated on drawings and as follows:
 1. Research or Evaluation Reports: Provide products for which model code research or evaluation reports exist that are acceptable to authorities having jurisdiction and that evidence compliance of metal framing anchors for application indicated with building code in effect for Project.
 2. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis, and demonstrated by comprehensive testing performed by a qualified independent testing agency.
 - B. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653, G60 (ASTM A 653M, Z180) coating designation; structural, commercial, or lock-forming quality, as standard with manufacturer for type of anchor indicated. For sheet steel fastened to preservative treated lumber, provide G185 coating.
 - C. Joist Hangers: U-shaped joist hangers with 2-inch long seat and 1-1/4 inch wide nailing flanges at least 85 percent of joist depth.
 1. Thickness: 0.052 inch (18 gage) minimum.
 - D. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.

1. Strap Width: 2 inches.
 2. Thickness: 0.052 inch (18 gage) minimum.
- E. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch above base and with 2-inch minimum side cover, socket 0.064 inch (16 gage) thick, standoff and adjustment plates 0.108 inch (12 gage) thick.
- F. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.
1. Width: 1-1/4 inches.
 2. Thickness: 0.064 inch (16 gage) minimum.
 3. Length: 16 inches.
- G. Rafter Tie-Downs (Hurricane Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-5/8 inches wide by 0.052 inch (18 gage) thick.

2.10 ACCESSORIES – WOOD SEALER

- A. A clear deep penetrating water-repellent preservative compound for wood that is NWWDA-tested; contains 3-iodo-2-propynyl butyl carbonate (IPBC) as its active ingredient; reduces moisture penetration; serves as a primer and sealer for oil or water based paint systems; and protects against ultraviolet degradation, airborne dirt, smog, industrial fumes, acid rain and most other atmospheric chemical.
1. Manufacturers: Tamms Industries Co. - "Chemstop Wood".
 2. Locations: Exterior plywood sheathing.

PART 3 – EXECUTION

3.1 PREPARATION – GENERAL CARPENTRY

- A. Verify dimensions and details before proceeding with the work.
- B. Coordinate locations of supports so that attached work will be secure and stable to support design loads of applicable wood specie.
- C. Verify location and use of treated lumber. Coat all cut surfaces of treated lumber with an approved preservative.

3.2 PREPARATION – FRAMING

- A. Advise installers of other work of the required limitations on notching and boring holes through wood frame members.
- B. Notches: Do not notch in end quarter or middle quarter of joists or rafters, and do not exceed 1/6 of depth of member for depth of notches in top or bottom of joists. Limit length of notches to 1/3 of depth of member.
- C. Holes: Do not bore holes closer than 2" from top or bottom of joists or rafters, and limit diameter to 1/3 of depth of member.

3.3 INSTALLATION – GENERAL CARPENTRY

- A. Utilize materials of longest practical lengths to prevent splicing.

- B. Do not use materials with warp, twist or bow in excess.
- C. Cut, scribe and cope for accurate fit.
- D. Set work accurately to required lines with members level, plumb and true with intersections to required angles.
- E. Shim to lines and levels with full bearing.

3.4 INSTALLATION – ANCHORING AND FASTENING

- A. Securely attach wood products, to each other and to other materials, as indicated and as recommended by published standards.
- B. Make tight connections between members.
- C. Do not allow nails and screws to penetrate opposite sides which will be exposed to view or will receive finish.
- D. Install fasteners without splitting of wood; pre-drill pilot holes for sizes larger than 1/8".
- E. Do not hammer threaded fasteners; tighten without lubrication.
- F. Install load carrying components with appropriate devices.
- G. Set fasteners flush with surface; counter bore screws, nuts and bolts.
- H. Nail or screw plywood in accord with APA publication E30A.

3.5 INSTALLATION – BLOCKING AND NAILERS, PLATES, SILLS AND CURBS

- A. Softwood lumber or plywood in appropriate strength and size for use. No piece less than 6' long, unless indicated by dimensions. Anchor: Board lumber 2' on center, dimension lumber 4' on center, not less than 2 bolts.
 - 1. Locations: Roof blocking for perimeters and penetrations. Also for secure fastening, stiffening, anchoring, hanging and attainment of various other profiles.

3.6 INSTALLATION – WOOD FRAMING

- A. Set accurately, plumb, level, and rigidly secured. Frame openings and comply with the AFPA WCD No. 1 and AFPA T11. Cut, join and tightly fit framing around other work. Do not splice structural members between supports unless otherwise detailed.
- B. Anchor and nails in accord with the following Publications except where modified by other portions of this specification.
 - 1. National Evaluation Report No. NER-272 for pneumatic or mechanical driven staples, P-Nails, and allied fasteners.
 - 2. Published requirements of manufacturer of metal framing anchors.
 - 3. Recommended Nailing Schedule of AFPA WCD No. 1 and AFPA T11.
 - 4. "Table 2304.9.1 - Fastening Schedule" of the 2015 International Building Code.

5. Tables "R602.3 (1) Fastener Schedule for Structural Members" and "R602.3 (2) Alternate Attachments" of the 2015 International Residential Code.

3.7 INSTALLATION-PROTECTION OF FRAMING – BRACING

- A. Temporarily brace framing to maintain alignment, sustain winds and construction loads.
- B. Leave bracing in place until lateral stability is achieved with other design elements.
- C. Remove temporarily bracing when no longer required.

3.8 INSTALLATION - ROUGH CARPENTRY HARDWARE

- A. Where wood joists frame into beams, use 16 gauge standard joist hangers and 10d nails.
- B. All roof trusses with overhangs and all other horizontal surfaces exposed to wind uplift shall be secured to the building framing with 16 gauge hurricane anchors and 8 nails.

3.9 INSTALLATION - WOOD SEALER

- A. Surface must be structurally sound, clean, free of dust, mildew, peeling paint, wood resin and all other contaminants. The weather must be dry and suitable for application, and the substrate dry for a minimum 3-5 days before application.
- B. All caulking and sealants must be installed prior to application of sealer.
- C. Sealer must be applied using airless spray equipment.
- D. All wood surfaces shall be sealed with one application coat which consists of a light fogging spray, followed immediately with a flood coat to achieve the deep penetration required for waterproofing. Allow 48 hours drying time.

3.10 INSPECTION

- A. The Owner shall employ and pay for the services of an independent Inspection Agency, acceptable to the Structural Engineer, to perform a field review of the installation of the structural wood framing.
- B. Field inspection shall include but is not limited to the following:
 1. Size, species and spacing of all roof rafters.
 2. All connections between individual framing members including beam to beam, joist to beam, beam to column and truss to beam/wall. These connections include nailing of plywood to framing members as well as installation of hurricane anchors, steel plate connections and other framing details.

3.11 CONTRACTOR'S RESPONSIBILITY

- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.
- B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION

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SECTION 06 15 33

PATIO DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes plastic decking.
- B. Related Requirements:
 - 1. Section 07 25 00 "Weather Barriers" for flexible flashing used with patio decking.
 - 2. Section 07 62 00 "Sheet Metal Flashing and Trim" for sheet metal flashing used with patio decking.

1.3 ACTION SUBMITTALS

- A. Product Data: For plastic decking.
 - 1. For plastic decking. Include installation instructions.
- B. Samples: For plastic decking, not less than 24 inches long, showing the range of variation to be expected in appearance of decking, including surface texture.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Plastic decking.
 - 2. Decking fasteners.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Handle and store plastic lumber to comply with manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PLASTIC DECKING

- A. Plastic Lumber, General: Products acceptable to authorities having jurisdiction with current model code evaluation reports that show compliance with building code in effect for Project for indicated type of construction.

1. Allowable loads and spans, as documented in evaluation reports or in information referenced in evaluation reports, shall not be less than design loads and spans indicated.
- B. Composite Plastic Lumber: Solid shapes made from a mixture of cellulose fiber and polyethylene or polypropylene.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. AZEK Building Products, Inc.
 - b. CertainTeed LLC; Saint-Gobain North America.
 - c. Fiberon.
 - d. Green Bay Decking.
 - e. Midwest Manufacturing Extrusion.
 - f. MoistureShield; CRH Americas, Oldcastle APG.
 - g. TimberTech.
 - h. Trex Company, Inc.
 - i. Universal Forest Products, Inc.
 2. Decking Standard: ICC-ES AC109 or ICC-ES AC174.
 3. Decking Size: As selected by Architect from manufacturer's full range.
 4. Configuration: Provide product with grooved edges designed for fastening with concealed decking fasteners.
 5. Surface Texture: As selected by Architect from manufacturer's full range.
 6. Color: As selected by Architect from manufacturer's full range.

2.2 FASTENERS

- A. General: Provide fasteners of size and type indicated, acceptable to authorities having jurisdiction, and that comply with requirements specified in this article for material and manufacture. Provide nails or screws, in sufficient length, to penetrate not less than 1-1/2 inches into wood substrate.
 1. Use fasteners with hot-dip zinc coating complying with ASTM A153/A153M or ASTM F2329 unless otherwise indicated.
 2. For pressure-preservative-treated wood, use stainless steel fasteners.
 3. For plastic decking, use stainless steel fasteners where fasteners are exposed to view.
- B. Nails: ASTM F1667.
- C. Power-Driven Fasteners: ICC-ES AC70.
- D. Wood Screws and Lag Screws: ASME B18.2.1, ASME B18.6.1, or ICC-ES AC233.

2.3 CONCEALED DECKING FASTENERS

- A. Deck Clips: Black-oxide-coated, stainless steel clips designed to be fastened to deck framing with screws, and to secure decking material with teeth that also provide uniform spacing of decking material.
 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Tiger Claw Inc.; Tiger Claw Hidden Deck Fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION, GENERAL

- A. Set work to required levels and lines, with members plumb, true to line, cut, and fitted. Fit work to other construction; scribe and cope as needed for accurate fit.
- B. Framing Standard: Comply with AF&PA WCD1 unless otherwise indicated.
- C. Install plastic lumber to comply with manufacturer's written instructions.
- D. Secure decking to framing with deck clips.
- E. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- F. Use common wire nails unless otherwise indicated. Select fasteners of size that do not fully penetrate members where opposite side is exposed to view. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads unless otherwise indicated.
- G. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced and with adjacent rows staggered.

END OF SECTION 06 15 33

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SECTION 06 16 00

SHEATHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Roof sheathing.
- 2. Sheathing joint and penetration treatment.

- B. Related Requirements:

- 1. Section 06 0573 "Wood Treatment" for all sheathing
- 2. Section 06 1000 "Rough Carpentry" for plywood backing panels.
- 3. Section 07 2500 "Weather Barriers" for water-resistive barrier applied over wall sheathing.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.

- 1. For products receiving a preservative treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
- 2. Include copies of warranties from chemical treatment manufacturers for each type of treatment.

- B. LEED Submittals:

- 1. Product Data for LEED V4 Credit: For adhesives, documentation including printed statement of VOC content.

- C. Sustainable Design Submittals: Certifications of following criteria

- 1. Dollar value of each distinct product specified to meet a LEED v4 Credit
- 2. Certified Wood – Provide "chain of custody" indicating origin of forest products, type of managed forest, and evidence of transfer to distributors.
- 3. Low Emitting Materials – Identify product, generic type and its Volatile Organic Compounds (VOC) content, along with required limits for respective type of product.

1.4 QUALITY ASSURANCE

- A. Manufacturer of Sheathing: Member of American Plywood Association (APA)

- B. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.5 REFERENCES

- A. American Plywood Association (APA)
 - 1. APA PS 1 Construction and Industrial Plywood (ANSI A199.1)
 - 2. APA E30A Design/Construction Guide Residential and Commercial
- B. APA – Engineered Wood Association
 - 1. APA AFG Adhesives for Field-Gluing Plywood to Wood Framing
 - 2. APA E30 Engineered Wood Construction Guide
 - 3. APA E830 Fastener Loads for Plywood – Screws
 - 4. APA PS-2 Performance Standards for Wood-Based Structural-Use Panels
 - 5. APA T325 Roof Sheathing Fastening Schedules for Wind Uplift
- C. LEED –Leadership in Energy & Environmental Design
 - 1. LEED v4 Credit Materials Conversion

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack panels flat with spacers beneath and between each bundle to provide air circulation. Protect sheathing from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

PART 2 – PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For assemblies with fire-resistance ratings, provide materials and construction identical to those of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
 - 1. Fire-Resistance Ratings: Indicated by design designations from UL's "Fire Resistance Directory."

2.2 MATERIALS – SOFTWOOD PLYWOOD/OSB: APA PS-1

- A. Certified Wood: Provide indicated specie of wood from a SF or FSC forest. LEED v4 [IgCC] Credit.
- B. Low Emitting Materials: Provide wood and Agrifiber products which contain no added urea formaldehyde resins. LEED v4 [IgCC] Credit.
- C. Fire-Resistant Oriented Strand Board:
 - 1. Product: FlameBlock Fire-Rated OSB Sheathing by LP-Building Products.

2.3 MATERIALS - PERFORMANCE RATED/ EXTERIOR (EXT) STRUCTURAL-USE PANELS

- A. Structural Roof Sheathing: OSB, Exterior 40/20 APA Group 1 rated sheathing.
 - 1. Location: Roof sheathing 5/8" thick – nailed, with clips.
- B. Low Emitting Materials: Provide wood and Agrifiber products which contain no added ureaformaldehyde resins.
- C. Thickness: As needed to comply with requirements specified, but not less than thickness indicated.
- D. Factory mark panels to indicate compliance with applicable standard.

2.4 FASTENERS

- A. General: As recommended by APA. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
- B. Screws for Fastening Wood Structural Panels to Cold-Formed Metal Framing: ASTM C 954, except with wafer heads and reamer wings, length as recommended by screw manufacturer for material being fastened.
 - 1. For wall and roof sheathing panels, provide screws with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117.

2.5 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

- A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C 834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.
 - 1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.

PART 3 – EXECUTION

3.1 INSTALLATION, GENERAL

- A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.
- B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.
- C. Securely attach to substrate by fastening as indicated, complying with the following:

1. Table 2304.9.1, "Fastening Schedule," in ICC's "International Building Code."

- D. Coordinate wall and roof sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.
- E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.
- F. Coordinate sheathing installation with installation of materials installed over sheathing so sheathing is not exposed to precipitation or left exposed at end of the workday when rain is forecast.

3.2 WOOD STRUCTURAL, PANEL INSTALLATION

- A. General: Comply with applicable recommendations in APA Form No. E30, "Engineered Wood Construction Guide," for types of structural-use panels and applications indicated.

3.3 INSTALLATION – PLYWOOD ROOF SHEATHING: NAILED ONLY

- A. Install with face grain across supports, using panels continuous over 2 or more spans with end joints between panels staggered and located over center of supports. Space panels 1/8" at edges and ends.
- B. Where edges of the roof plywood abut one another, use plywood sheathing clips at 16" on center.
- C. Nail to framing in accordance with APA E30. Use common smooth or deformed shank 8d nails or screw attach to framing in accordance with APA E830. Use #12 screws or ¼-20 self tapping screws. Fasten 6 inches on center along panel ends and 8 inches on center at intermediate supports. For high wind zones fasten in accordance with APA T325.
- D. Provide support at unsupported long edges with "Plyclips" or wood blocking.
- E. Fire Rated Assembly: Install sheathing as indicated or on drawings.

3.4 INSPECTION

- A. The Owner will employ and pay for the services of an independent Inspection Agency, acceptable to the Structural Engineer, to perform a field review of the installation of the structural wood framing.
- B. Field inspection shall include but is not limited to the following:
 - 1. Installation of all roof sheathing.

3.5 CONTRACTOR'S RESPONSIBILITY

- A. Submit copies of all reports indicating conformance and exceptions to contract documents in a timely fashion to General Contractor for distribution to design consultants, owner, subcontractors and other interested parties.

- B. Final Report: The Inspection Agency shall prepare a written report that summarizes the work inspected during the course of the project and certifies that the work meets the requirements of the contract documents, specifications, and all governing agencies.

END OF SECTION

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SECTION 06 18 00

GLUED LAMINATED CONSTRUCTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Glue laminated timber
- B. Glue laminated decking

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Section 06 05 73 Wood Treatment – (All Glue Laminated Units)
- C. Section 06 10 00 Rough Carpentry.

1.3 DEFINITIONS

- A. Definition: Glued laminated timber includes wood members fabricated from 1" or 2" nominal thickness lumber glued face-to-face to a depth of 6" or more.
- B. The types of glued laminated structural units specified in this section include:
 - 1. Straight-grained beams; including girders and purlins, and cambered members.
 - 2. Curved or arched structural members (curved glue lines).
 - 3. Columns; including posts and standards.
 - 4. Prefabricated trusses with chords of glued laminated timber.
 - 5. Non-structural members as indicated.
 - 6. Laminated wood decking.
- C. Extent of glued laminated structural units (GL-StrU) is shown on drawings.

1.4 QUALITY ASSURANCE

- A. Standards: Except as otherwise indicated, comply with PS 56 and AITC A190.1 "Structural Glued Laminated Timber."
 - 1. For laminated decking, form units from lumber graded by a recognized agency, complying with requirements of American Lumber Standards Committee and PS 20.
- B. Manufacturer Qualification: Provide factory-glued structural units, produced by an AITC- licensed firm, qualified to apply the AITC "Quality Inspected" mark.
- C. Grading of lumber: Provide lumber graded by a recognized agency, with rules and service complying with requirements of American Lumber Standards Committee and PS 20. Use only lumber pieces which bear inspection service's grade mark, unless otherwise indicated. (Remove mark during fabrication if necessary.)

- D. Kiln-dry waterborne treated products to a moisture not to exceed 19 percent.
- E. Factory mark each piece of glued laminated structural units with AITC Quality Inspected mark. Place AITC mark on timber surfaces which will not be exposed in completed work.
- F. Installer: Glued laminated structural unit manufacturer, or a firm licensed by manufacturer.

1.5 REGULATORY REQUIREMENTS

- A. Design by Manufacturer: Where portions of final design for glued laminated timber members are indicated as manufacturer's responsibility (any element of design consideration), comply with applicable provisions of AITC 117 - "Design, Standard Specifications for Structural Glued Laminated Timber of Softwood Species."
- B. Design and fabricate glue laminated structural units under direct supervision of a Professional Engineer experienced in the design of structures, registered in the state of Maryland.
- C. Conform to the IBC Building Code and References.

1.6 REFERENCES: Comply with the applicable requirements:

- A. ASTM – American Society for Testing and Materials
 - ASTM A 36 Standard Specification for Carbon Structural Steel
 - ASTM A276 Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes
 - ASTM A 307 Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
 - ASTM F 1667 Standard Specification for Driven Fasteners, Nails, Spikes, and Staples
- B. FS - Federal Specifications
 - FS FF-B-561 Bolts, (Screw), Lag
- C. National Bureau of Standards (NBS):
 - NBS PS-20 American Softwood Lumber Standard
 - NBS PS-56 Structural Glued Laminated Timber.
- D. National Forest Products Association (NFPA)
 - NFPA, National Design Specifications for Wood Construction.
- E. NIST, National Institute of Standards and Technology
 - NIST PS-20 American Softwood Lumber Standards
- F. American Institute of Timber Construction (AITC)
 - AITC 108 Standard for Heavy Timber Construction
 - AITC 109 Standard for Preservative Treatment of Structural Glued Laminated Timber
 - AITC 110 Standard Appearance for Structural Glued Laminated Timber
 - AITC 111 Recommended Practice for Protection of Structural Glued Laminated Timber During Transit, Storage and Erection
 - AITC-117 Design - Standard Specifications for Structural Glued Laminated Timber of Softwood Species.
 - ANSI/AITC-A190.1, Structural Glued Laminated Timber
 - AITC 200 Inspection Manual

- G. AWPA – American Wood Preservers Association
AWPA-M4, Standard for the Care of Preservative Treated Wood Products

1.7 SUBMITTALS

A. Designing and Engineering Data:

1. Indicate species and stress grade of lumber, type of glue, and other variables in required work.
2. Submit shop drawings showing full dimensions of each member and layout of entire structural system. Show large scale details of connections, connectors and other accessories.
3. Provide large scale details of concealed metal connectors at joints and installation anchorages.
4. To the extent engineering design considerations are specified as manufacturer's responsibility, show loading, section modulus, assumed allowable stress, stress diagrams and calculations, and similar information needed for analysis.
5. Shop drawings and calculations to be stamped by a structural engineer licensed to practice in the State of New York.

B. Product Data: Submit manufacturer's data, specifications and installation instruction covering lumber, adhesives, fabrication process, preservative treatment, accessories and protection.

1. For preservative-treated wood products, include chemical treatment manufacturer's written instructions for handling, storing, installing, and finishing treated material.

C. Samples: Submit samples, 24" long x full width x depth of 3 laminations, showing range of variation expected in appearance of glued laminated structural units, including specified treatment, if any. Samples will be reviewed by Architect for color, pattern and texture only. Compliance with other requirements is exclusive responsibility of Contractor.

1. Apply specified factory finish to 3 sides of half-length of each sample.

D. Certification: Statement signed by an officer of the manufacturing firm, indicating glued laminated timbers comply with requirements of PS 56 and AITC A190.1.

1.8 PRODUCT HANDLING, DELIVERY AND STORAGE

A. Keep glued laminated structural units dry during delivery, storage, handling, and erection by maintaining factory-applied protective covering in weather-tight and light-proof condition, or by applying other weather-tight protection. Maintain protective covering until building enclosure is completed to extent necessary for protection of interior GL-StrU work, and until final finishing of exterior work is ready to proceed. Do not store GL-StrU in areas of either excessively high or excessively low relative humidity; comply with manufacturer's instructions.

B. Time delivery and installation of GL-StrU work to avoid extended on-site storage, and to avoid delaying work of other trades whose work must follow erection of GL-StrU work.

PART 2 - PRODUCTS

2.1 GLUED LAMINATED STRUCTURAL UNITS

- A. Lumber: Comply with PS 56 and AITC A190.1 and applicable lumber association standards cited therein for grades required to achieve GL-StrU requirements for allowable stress, appearance, fabrication limitations and species (if any).
1. Lumber Species: Any softwood lumber or mixed species, at manufacturer's option, as required to comply with other requirements.
 2. Stress Values: Provide glued laminated timber members meeting Grade 24F-V4 sized as shown on drawings that meet or exceed following stress values:
 - Bending (Fb), 2400 psi
 - Horizontal shear (Fv), 265 psi
 - Compression perpendicular to grain (loaded perpendicular to wide face), 650 psi
 - Compression perpendicular to grain (loaded parallel to wide face), 560 psi
 - Modulus of Elasticity (E), 1,800,000 psi
 - Tension parallel to grain (Ft-axially loaded), 1100 psi
 - Compression parallel to grain (Fc-axially loaded), 1650 psi
 3. Adhesive: Comply with PS 56 and AITC A190.1, using wet-use (waterproof) adhesive, marine grade, unless otherwise indicated.
 4. End Sealer: Manufacturer's standard transparent, colorless wood sealer, effective in retarding transmission of moisture at cross-grain cuts.
 5. Preservative Treatment before Fabrication: Where preservative-treated structural glued-laminated timber is indicated, pressure treat lumber before gluing according to AWWA C28.
 - a. Use pentachlorophenol in light petroleum solvent.
 - b. Use preservative solution without substances that might interfere with application of indicated finishes.
 - c. Do not incise wood used for producing structural glued-laminated timber.
 - d. After dressing and fabricating members, apply a copper naphthenate field-treatment preservative to comply with AWWA M4 to surface cut to a depth of more than 1/16 inch.
 6. Penetrating Sealer: Manufacturer's standard translucent penetrating wood sealer, which will not interfere with application of wood stain and transparent finish, or paint finish as indicated. Refer to Division 9 sections for required finishes.

2.2 CONNECTORS, ANCHORS AND ACCESSORIES

- A. Provide fabricated steel shapes, plates and bars, welded into assemblies of types and sizes indicated or, if not indicated, manufacturer's standard units for timber sizes indicated. Unless otherwise indicated, fabricate from the following materials:
1. Stainless-steel plate, flat bars and sheets complying with ASTM A666, Type 316.
 2. Stainless-steel bars and shapes complying with ASTM A276, Type 316.
- B. Bolts for Anchoring Decking to Walls: Stainless steel; complying with ASTM F593, Alloy Group 1 or 2; with ASTM F-594, Alloy Group 1 or 2 hex nuts and flat washers.
- C. Nails, screws, spikes and other fastening materials; Stainless steel.
- D. Except as otherwise indicated, finish fabricated assemblies with rust-inhibitive primer.
- E. Where "Wet-Use" GL-StrU work is indicated, finish fabricated assemblies with hot-dip zinc coating (ANSI/ASTM A-153), including bolts and other fasteners.

2.3 FABRICATION OF GLUE LAMINATED STRUCTURAL UNITS

- A. General: Comply with PS 56 and AITC A190.1 in providing units indicated; where dimensions are not completely documented, provide manufacturer's standard sizes and shapes required to fulfill indicated performances.
- B. Appearance Grade: Provide Premium Grade, Architectural Grades, Industrial Grade timbers complying with AITC 110.
- C. Camber: Except where the required camber for fabrication of each member is shown on the drawings, fabricate horizontal load-bearing members (units of less than 12 to 12 slope), which are shown as straight members (not arched), with a camber of approximately 1/180 of the span, either circular or parabolic at the manufacturer's option.
- D. Glued laminated decking (GL-Dk): Provide glued laminated wood decking with the following features:
 - 1. Face Species: Douglas Fir/Larch
 - 2. Face Grade: Decorative/Architectural
 - 3. Face Surface: Smooth
 - 4. Pattern: Edge Vee
- E. Preservative Treatment:
 - 1. For timbers which are to receive no other finish, provide water repellent additive in preservative solution.
 - 2. For all finished timbers, provide preservative treatment solution free of water repellents and other substances which might interfere with application of finishes.
 - 3. Preservative treatment for exterior member in accordance with AITC 109.
- F. End-Cut Sealing: Immediately after end-cutting each member to final length, and after wood treatment (if any), apply a saturation coat of end sealer to ends and other cross-cut surfaces, keeping surfaces "flood-coated" for not less than 10 minutes.
- G. Seal Coat: After fabrication and sanding of each unit, and end-coat sealing, apply a heavy saturation coat of penetrating sealer on surfaces of each unit, except for treated wood where treatment has included a water repellent.
- H. Factory Finishing:
 - 1. Wiped Stain Finish: Manufacturer's standard "dry-appearance" penetrating acrylic stain-and-sealer, oven dried and resistant to mildew and fungus. Color shall match architect's sample.
 - 2. Provide color selected by Architect from manufacturer's standard colors, or matching Architect's color.
- I. Factory Applied Protection: (AITC 111):
 - 1. Before shipping or exposing to outdoor conditions, individually wrap each member with manufacturer's standard, opaque, durable, water-resistant, plastic-coated paper covering, with water-resistant seams.
 - 2. At manufacturer's option, small members of uniform size may be bundle-wrapped, in lieu of individual wrappings. Provide protective slip-sheets between finished surfaces where factory-finishes have been provided.

PART 3 - EXECUTION

3.1 INSTALLATION OF GLUE LAMINATED STRUCTURAL UNITS

- A. Erect GL-StrU in accord with recommendations of manufacturer and comply with AITC 108 "Standard for Heavy Timber Construction."
- B. Hoist units in place by means of proper lifting equipment suited to sizes and types of GL- StrU required, applied at proper lift points as recommended by fabricator, exercising care not to damage members or joints by out-of-plane bending or other causes.
- C. Temporarily brace to maintain GL-StrU plumb, parallel and in proper location, until permanent bracing is installed.
- D. Anchor GL-StrU securely at bearing points to comply with design and details indicated.
- E. Install permanent bracing and related components to enable GL-StrU to maintain design (including lateral loads) and spacing, withstand live and dead loads.
- F. Handle and temporarily support members to prevent visible surface damage.
- G. Cutting: Avoid cutting GL-StrU members during erection, to greatest extent possible. Except for fastener drilling and other minor cutting, coat cuts with end sealer as specified for "Fabrication." Where treated members must be cut during erection, apply a heavy brush coat of the same treatment, complying with AWPA Standard M4.
- H. Do not remove wrapping on individually wrapped members until it will serve no useful purpose, including protection from weather, soiling and damage from work of other trades. Coordinate removal of wrapping with finishing work specified in the Division 9 sections. Retain wrapping wherever it can serve as a painting shield.
- I. Glue Laminated Decking:
 - 1. Install glued laminated decking with a bead of structural joint adhesive in each tongue-and-groove joint. Install in manner certified by manufacturer to qualify deck construction for diaphragm action, as required by governing regulations and industry standards.
 - 2. Predrill decking for lateral spiking to adjacent units to comply with manufacturer's instructions and with AITC recommendations for nailing wood decking. Comply with governing regulations.
 - 3. Maintain expansion spaces as shown, and as required by applicable AITC standards, and as recommended by decking manufacturer.
- J. Apply a bead of non-structural sealant under each tongue and groove at outside wall supports for an airtight seal.
- K. Repair damaged surfaces and finishes, after completion of erection and removal of wrappings, or replace damaged members as directed where damage is beyond satisfactory repair.
- L. Protection: Advise Contractor of necessary limitations on heating, ventilating and air conditioning in building, in order to avoid damage or deterioration of GL-StrU work.

3.2 INSPECTION

- A. Owner will employ and pay for services of an independent Inspection Agency, in accordance with Section 01 4000. Inspection Agency shall be acceptable to Structural Engineer and will perform field inspection of installation of GL-StrU.
- B. Field Inspection: Shall include:
 - 1. Size, species and layout of chords and diagonals of individual glue laminated wood trusses including connector plate installation.
 - 2. Inspection of trusses and glue lams to assure that they have not been mishandled during shipping and erection.
 - 3. Installation of permanent and temporary bridging, strut bracing, stiffbacks connection plates, beam hangers, etc. required by Contract Documents and GL-StrU Shop Drawings.
 - 4. Submit copies of all daily reports indicating conformance to General Contractor for distribution to design consultants, owner, sub-consultants and other interested parties.
- C. Inspection Agency shall prepare and submit, to Architect, a written report certifying that wood truss framing meets requirements of Contract Drawings.
- D. See Section 06 1000 for additional requirements.

END OF SECTION

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SECTION 06 20 13

EXTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes exterior cellular PVC and foam-plastic trim.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view and for framing exposed to view.

1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.
- B. Samples: For each exposed product and for each color and texture specified.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Cellular PVC trim.
 - 2. Foam-plastic moldings.

1.6 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecast weather conditions permit work to be performed and at least one coat of specified finish can be applied without exposure to rain, snow, or dampness.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.

1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 EXTERIOR TRIM

- A. Cellular PVC Trim: Extruded, expanded PVC with a small-cell microstructure, recommended by manufacturer for exterior use, made from UV- and heat-stabilized rigid material.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. AZEK Building Products, Inc.; Azek.
 - b. CertainTeed Corporation; Saint-Gobain North America; CertainTeed Restoration Millwork.
 - c. Kommerling USA, Inc.; Koma.
 - d. Versatex Trimboard; a Wolfpac Technologies, Inc. company; Versatex.
 2. Density: Not less than 31 lb/cu. ft.
 3. Heat Deflection Temperature: Not less than 130 deg F, according to ASTM D648.
 4. Coefficient of Thermal Expansion: Not more than 4.5×10^{-5} inches/inch x deg F.
 5. Water Absorption: Not more than 1 percent, according to ASTM D570.
 6. Flame-Spread Index: 75 or less, according to ASTM E84.
- B. Foam-Plastic Moldings: Molded product of shapes indicated, recommended by manufacturer for exterior use, with a tough outer skin on exposed surfaces; factory primed. Exposed surfaces shall not be shaped after molding.
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
 - a. Fypon Ltd.
 2. Density: Not less than 20 lb/cu. ft.
 3. Flame-Spread Index: Not more than 75 when tested according to ASTM E84.
 4. Thickness: Not more than 1/2 inch.
 5. Width: Not more than 8 inches.

2.2 MISCELLANEOUS MATERIALS

- A. Fasteners for Exterior Finish Carpentry: Provide nails or screws, in sufficient length to penetrate not less than 1-1/2 inches into wood substrate.
1. Provide stainless steel or hot-dip galvanized-steel fasteners.
- B. Fasteners for Cellular PVC Trim: Fastening system with PVC plugs.
1. Products: Subject to compliance with requirements, provide the following:
 - a. FastenMaster; Cortex Hidden Fastening System for PVC Trim.

- C. Adhesive for Cellular PVC Trim: Product recommended by trim manufacturer.
- D. Flashing: Comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim" for flashing materials installed in exterior finish carpentry.
- E. Sealants: Latex, complying with ASTM C834 Type OP, Grade NF and applicable requirements in Section 07 92 00 "Joint Sealants," and recommended by sealant and substrate manufacturers for intended application.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Bostik, Inc.; Chem-Calk 600.
 - b. Franklin International; Titebond UA 920 Sealant.
 - c. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex 600.
 - d. Pecora Corporation; AC-20+.
 - e. Permathane/Acryl-R; ITW Polymers Sealants North America; SM 8200.
 - f. Tremco, Inc.; Tremflex 834.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Prime lumber and moldings to be painted, including both faces and edges, unless factory primed.
 - 1. Cut to required lengths and prime ends.
 - 2. Comply with requirements in Section 09 91 13 "Exterior Painting."

3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, or too small to fabricate with proper jointing arrangements.
 - 1. Do not use manufactured units with defective surfaces, sizes, or patterns.
- B. Install exterior finish carpentry level, plumb, true, and aligned with adjacent materials.
 - 1. Use concealed shims where necessary for alignment.
 - 2. Scribe and cut exterior finish carpentry to fit adjoining work.
 - 3. Refinish and seal cuts as recommended by manufacturer.

4. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining exterior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
5. Coordinate exterior finish carpentry with materials and systems in or adjacent to it.
6. Provide cutouts for mechanical and electrical items that penetrate exterior finish carpentry.

3.4 INSTALLATION OF STANDING AND RUNNING TRIM

- A. Install cellular PVC trim to comply with manufacturer's written instructions.
- B. Install trim with minimum number of joints as is practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary.
 1. Use scarf joints for end-to-end joints.
 2. Stagger end joints in adjacent and related members.
- C. Fit exterior joints to exclude water.
 1. Cope at returns and miter at corners to produce tight-fitting joints, with full-surface contact throughout length of joint.
 2. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
- D. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.

3.5 ADJUSTING

- A. Replace exterior finish carpentry that is damaged or does not comply with requirements.
 1. Exterior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.
- B. Adjust joinery for uniform appearance.

3.6 CLEANING

- A. Clean exterior finish carpentry on exposed and semiexposed surfaces.

3.7 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

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2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 06 20 13

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SECTION 06 20 23

INTERIOR FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Interior trim, including non-fire-rated interior door frames.
- 2. Interior board paneling.

- B. Related Requirements:

- 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for furring, blocking, and other carpentry work not exposed to view.
- 2. Section 06 42 14 "Stile and Rail Wood Paneling."
- 3. Section 09 91 23 "Interior Painting" for priming and backpriming of interior finish carpentry.
- 4. Section 09 93 00 "Staining and Transparent Finishing."

1.3 DEFINITIONS

- A. MDF: Medium-density fiberboard.
- B. MDO: Plywood with a medium-density overlay on the face.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.

- 1. Include data for wood-preservative treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained. Include chemical-treatment manufacturer's written instructions for finishing treated material.
- 2. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- 3. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced before shipment to Project site to levels specified.

4. Include copies of warranties from chemical-treatment manufacturers for each type of treatment.

B. Samples for Verification:

1. For each species and cut of lumber and panel products with non-factory-applied finish, with 1/2 of exposed surface finished, 50 sq. in. for lumber and 8 by 10 inches for panels.
2. For each finish system and color of lumber and panel products with factory-applied finish, 50 sq. in. for lumber and 8 by 10 inches for panels.

1.5 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For fire-retardant-treated wood, from ICC-ES.
- B. Sample Warranty: For manufacturer's warranty.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber, plywood, and other panels flat with spacers between each bundle to provide air circulation. Protect materials from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.
- B. Deliver interior finish carpentry materials only when environmental conditions meet requirements specified for installation areas. If interior finish carpentry materials must be stored in other than installation areas, store only where environmental conditions meet requirements specified for installation areas.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install interior finish carpentry materials until building is enclosed and weatherproof, wet work in space is completed and nominally dry, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Do not install finish carpentry materials that are wet, moisture damaged, or mold damaged.
 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Lumber: DOC PS 20 and the following grading rules:

1. NeLMA: Northeastern Lumber Manufacturers' Association, "Standard Grading Rules for Northeastern Lumber."
 2. NHLA: National Hardwood Lumber Association, "Rules for the Measurement and Inspection of Hardwood & Cypress."
 3. NLGA: National Lumber Grades Authority, "Standard Grading Rules for Canadian Lumber."
 4. SPIB: The Southern Pine Inspection Bureau, "Standard Grading Rules for Southern Pine Lumber."
 5. WCLIB: West Coast Lumber Inspection Bureau, Standard No. 17, "Grading Rules for West Coast Lumber."
 6. WWPA: Western Wood Products Association, "Western Lumber Grading Rules."
- B. Factory mark each piece of lumber with grade stamp of inspection agency indicating grade, species, moisture content at time of surfacing, and mill.
1. For exposed lumber, mark grade stamp on end or back of each piece.
- C. Softwood Plywood: DOC PS 1.
- D. Hardboard: AHA A135.4.
- E. MDF: ANSI A208.2, Grade 130, made with binder containing no urea-formaldehyde resin.
- F. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea-formaldehyde resin.

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: For applications indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction, and comply with testing requirements; testing by a qualified testing agency.
- B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent respectively.
- C. For exposed items indicated to receive a stained or natural finish, use organic resin chemical formulations that do not contain colorants, and provide materials that do not have marks from spacer sticks on exposed face.
- D. Do not use material that does not comply with requirements for untreated material or is warped or discolored.
- E. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.

1. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
2. For exposed plywood indicated to receive a stained or natural finish, mark back of each piece.

F. Application: All interior lumber and plywood.

2.3 INTERIOR TRIM

A. Hardwood Lumber Trim for Transparent Finish (Stain or Clear Finish):

1. Species and Grade: Oak, or Maple as noted on Drawings, Grade FAS one face. White maple; Clear; NHLA.
2. Maximum Moisture Content: 13 percent.
3. Finger Jointing: Not allowed.
4. Gluing for Width: Allowed.
5. Veneered Material: Allowed Use for lumber trim wider than 6 inches.
6. Face Surface: Surfaced (smooth).
7. Matching: Selected for compatible grain and color.

B. Lumber Trim for Opaque Finish (Painted Finish):

1. Species and Grade: Yellow Poplar or MDF (Medium Density Fiber Board) Clear or A Finish; NHLA.
2. Maximum Moisture Content: 13 percent.
3. Finger Jointing: Allowed.
4. Face Surface: Surfaced (smooth).
5. Optional Material: Primed MDF of same actual dimensions as lumber indicated may be used in lieu of lumber.

C. Hardwood Moldings for Transparent Finish (Stain or Clear Finish): WMMPA HWM 2, N-grade wood moldings made to patterns included in WMMPA HWM 1.

1. Species: Oak, or White Maple as noted on Drawings, Grade FAS one face.
2. Maximum Moisture Content: 9 percent.
3. Finger Jointing: Not allowed.
4. Matching: Selected for compatible grain and color.
5. Base Pattern: As indicated on Drawings.
6. Shoe-Mold Pattern: As indicated on Drawings.
7. Casing Pattern: As indicated on Drawings.
8. Stop Pattern: As indicated on Drawings.
9. Chair-Rail Pattern: As indicated on Drawings.

D. Moldings for Opaque Finish (Painted Finish): Made to patterns included in WMMPA WM 12.

1. Hardwood Moldings: WMMPA HWM 2, P-grade.
 - a. Species: Yellow Poplar or MDF (Medium Density Fiber Board)
 - b. Maximum Moisture Content: 9 percent.
2. Optional Material: Primed MDF.
3. Finger Jointing: Allowed.

4. Base Pattern: As indicated on Drawings.
5. Shoe-Mold Pattern: As indicated on Drawings.
6. Casing Pattern: As indicated on Drawings.
7. Stop Pattern: As indicated on Drawings.
8. Chair-Rail Pattern: As indicated on Drawings.

2.4 WOOD VENEER

- A. Wood Veneer Paneling shall meet standards specified in Section 06 41 13 Wood Veneer Faced Architectural Cabinets, Part 2.4

2.5 PANELING

- A. Board Paneling: Interior wood-board paneling complying with NHLA.
 1. Species: White Maple.
 2. Grade: Clear.
 3. Maximum Moisture Content: 13 percent.
 4. Pattern: V-joint, tongue and groove, PT-82.
 5. Net Coverage Width: Not less than 5-1/16 inches.

2.6 MISCELLANEOUS MATERIALS

- A. Fasteners for Interior Finish Carpentry: Nails, screws, and other anchoring devices of type, size, material, and finish required for application indicated to provide secure attachment, concealed where possible.
- B. Glue: Aliphatic-resin, polyurethane, or resorcinol wood glue recommended by manufacturer for general carpentry use.
 1. Wood glue shall have a VOC content of 30 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Paneling Adhesive: Comply with paneling manufacturer's written recommendations for adhesives.
 1. Adhesive shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Multipurpose Construction Adhesive: Formulation complying with ASTM D 3498 that is recommended for indicated use by adhesive manufacturer.
 1. Adhesive shall have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.7 FABRICATION

- A. Back out or kerf backs of the following members except those with ends exposed in finished work:

1. Interior standing and running trim except shoe and crown molds.
 2. Wood-board paneling.
- B. Ease edges of lumber less than 1 inch in nominal thickness to 1/16-inch radius and edges of lumber 1 inch or more in nominal thickness to 1/8-inch radius.
- C. If MDF is utilized for running trim, 90° edges are to be “blunted” down.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Examine finish carpentry materials before installation. Reject materials that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.
- B. Before installing interior finish carpentry, condition materials to average prevailing humidity in installation areas for a minimum of 24 hours unless longer conditioning is recommended by manufacturer.

3.3 INSTALLATION, GENERAL

- A. Do not use materials that are unsound, warped, improperly treated or finished, inadequately seasoned, too small to fabricate with proper jointing arrangements, or with defective surfaces, sizes, or patterns.
- B. Install interior finish carpentry level, plumb, true, and aligned with adjacent materials. Use concealed shims where necessary for alignment.
 1. Scribe and cut interior finish carpentry to fit adjoining work. Refinish and seal cuts as recommended by manufacturer.
 2. Where face fastening is unavoidable, countersink fasteners, fill surface flush, and sand unless otherwise indicated.
 3. Install to tolerance of 1/8 inch in 96 inches for level and plumb. Install adjoining interior finish carpentry with 1/32-inch maximum offset for flush installation and 1/16-inch maximum offset for reveal installation.
 4. Install stairs with no more than 3/16-inch variation between adjacent treads and risers and with no more than 3/8-inch variation between largest and smallest treads and risers within each flight.

5. Coordinate interior finish carpentry with materials and systems in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate interior finish carpentry.

3.4 STANDING AND RUNNING TRIM INSTALLATION

- A. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary. Stagger joints in adjacent and related standing and running trim. Miter at returns, miter at outside corners, and cope at inside corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints. Scarf joints are to be glued in the field to help prevent separation and unevenness. Plane backs of casings to provide uniform thickness across joints where necessary for alignment.
 1. Match color and grain pattern of trim for transparent finish (stain or clear finish) across joints.
 2. Install trim after gypsum-board joint finishing operations are completed.
 3. Install without splitting; drill pilot holes before fastening where necessary to prevent splitting. Fasten to prevent movement or warping. Countersink fastener heads on exposed carpentry work and fill holes.

3.5 PANELING INSTALLATION

- A. Board Paneling: Install according to manufacturer's written instructions. Arrange in random-width pattern suggested by manufacturer unless boards or planks are of uniform width.
 1. Install in full lengths without end joints.
 2. Stagger end joints in random pattern to uniformly distribute joints on each wall.
 3. Install with uniform end joints with only end-matched (tongue-and-groove) joints within each field of paneling.
 4. Install with uniform end joints. Locate end joints only over furring or blocking.
 5. Select and arrange boards on each wall to minimize noticeable variations in grain character and color between adjacent boards. Install with uniform tight joints between boards.
 6. Fasten paneling by blind nailing through tongues.
 7. Fasten paneling to gypsum wallboard with panel adhesive.

3.6 ADJUSTING

- A. Replace interior finish carpentry that is damaged or does not comply with requirements. Interior finish carpentry may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing. Adjust joinery for uniform appearance.

3.7 CLEANING

- A. Clean interior finish carpentry on exposed and semiexposed surfaces. Restore damaged or soiled areas and touch up factory-applied finishes, if any.

3.8 PROTECTION

- A. Protect installed products from damage from weather and other causes during construction.
- B. Remove and replace finish carpentry materials that are wet, moisture damaged, and mold damaged.
 - 1. Indications that materials are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - 2. Indications that materials are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 06 20 23

SECTION 06 41 13

WOOD-VENEER-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Architectural wood cabinets.
- 2. Wood furring, blocking, shims, and hanging strips for installing architectural wood cabinets unless concealed within other construction before cabinet installation.
- 3. Shop finishing of architectural wood cabinets.

- B. Related Requirements:

- 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets and concealed within other construction before cabinet installation.
- 2. Section 12 36 23 "Plastic-Laminate-Clad Countertops."
- 3. Section 12 36 40 "Stone Countertops."
- 4. Section 12 36 61 "Simulated Stone Countertops."

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including panel products, fire-retardant-treated materials, cabinet hardware and accessories, and finishing materials and processes.

- 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

- 1. Show details full size.
- 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

3. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural wood cabinets.
 4. Show veneer leaves with dimensions, grain direction, exposed face, and identification numbers indicating the flitch and sequence within the flitch for each leaf.
- C. Samples for Initial Selection: Submit through Architect to Interior Designer:
1. Shop-applied transparent finishes.
- D. Samples for Verification: Submit through Architect to Interior Designer:
1. Lumber for transparent finish, not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.
 2. Veneer leaves representative of and selected from flitches to be used for transparent-finished cabinets.
 3. Exposed cabinet hardware and accessories, one unit for each type and finish.
 4. One full-size, 16 inches wide, finished base cabinet of each species complete with hardware, doors, and drawers but without countertop. Sample will be returned to Contractor for use on Project.
 5. One full-size, 12 inches wide, finished wall cabinet of each species complete with hardware, doors, and adjustable shelves. Sample will be returned to Contractor for use on Project.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed in installation areas. If cabinets must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that wood-veneer-faced architectural cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CABINET FABRICATORS

- A. Source Limitations: Engage a qualified woodworking firm to assume undivided responsibility for production of architectural wood cabinets with sequence-matched wood veneers and transparent-finished wood doors that are required to be of same species as woodwork.

2.2 ARCHITECTURAL WOOD CABINETS, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural wood cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. Woodwork, including installation, to meet AWI certification program standards.
 - 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

2.3 WOOD CABINET TYPES - AS THEY RELATE TO THE FINISH SCHEDULE AND INTERIOR DRAWINGS.

- A. MW-A1 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Rift Cut Euro Oak on all exposed

wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and stained to match designer sample.

- B. MW-A2 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Poplar on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and painted to match designer sample.
- C. MW-A3 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Rift Euro Oak on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Recessed Panel with decorative metal insert
- D. MW-A4 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Slightly distressed Maple on all exposed wood.
- E. MW-A5 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Poplar on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and painted to match designer sample.
- F. MW-A6 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and stained to match designer sample.
- G. MW-A7 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Slightly distressed Oak on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and stained to match designer sample.
- H. MW-A8 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Poplar on all exposed wood painted to match designer sample.
- I. MW-A9 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Rift Cut Euro Oak on all exposed wood and stained to match designer sample.
- J. MW-A10 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Rift Cut Euro Oak on all exposed wood. Door Style: Recessed Panel as detailed on Drawings, Recessed Panel with tempered glass panel insert.
- K. MW-A11 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Poplar on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer

Head: As detailed on Drawings Slab profiled drawer head lip/edge and painted to match designer sample.

- L. MW-A12 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Bog Oak on all exposed wood and stained to match designer sample.
- M. MW-A13 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Reclaimed Solid Rift Cut Oak on all exposed wood and stained to match designer sample.
- N. MW-A14 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Vintage Euro Oak on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and stained to match designer sample.
- O. MW-A15 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Poplar on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and painted to match designer sample.
- P. MW-A16 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Slightly distressed Maple on all exposed wood with beadboard panel insert painted to match designer sample.
- Q. MW-A17 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door Style: Stile and rail as detailed on Drawings, Flat Panel with slab door head lip; Drawer Head: As detailed on Drawings Slab profiled drawer head lip/edge and stained to match designer sample.
- R. MW-A18 Custom Millwork – Frameless custom construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Reclaimed Solid Rift Cut Oak on all exposed wood stained to match designer sample.
- S. MW-B1 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished to match one of the following resident selections: Shale, Cotton, Hazelnut, or Kona.
- T. MW-B2 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Hazelnut.
- U. MW-B3 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Graphite.

- V. MW-B4 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Nightfall.
- W. MW-B5 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Kona.
- X. MW-B6 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Cotton.
- Y. MW-B7 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Shale.
- Z. MW-B8 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Hickory.
- AA. MW-B9 Manufactured Cabinetry – Framed construction unless otherwise needed in order to achieve the design as shown on the drawings. Wood Species: Maple on all exposed wood. Door and Drawer Head are to match Merillat Classic Cabinetry in the Ralston Square Recessed Panel style and finished as Pecan.

2.4 WOOD CABINETS FOR TRANSPARENT FINISH

- A. Grade: Premium.
- B. Type of Construction: Frameless.
- C. Cabinet and Door and Drawer Front Interface Style: Flush overlay.
- D. Wood for Exposed Surfaces:
 - 1. Species: Oak or Maple as noted on Drawings, Grade A.
 - 2. Cut: Quarter cut/quarter sawn.
 - 3. Grain Direction: Vertically for doors and fixed panels, horizontally for drawer fronts.
 - 4. Matching of Veneer Leaves: Slip match.
 - 5. Veneer Matching within Panel Face: Balance match.
 - 6. Veneer Matching within Room: Provide cabinet veneers in each room or other space from a single flitch with doors, drawer fronts, and other surfaces matched in a sequenced set with continuous match where veneers are interrupted perpendicular to the grain.
 - 7. Comply with veneer and other matching requirements indicated for blueprint-matched paneling.
- E. Semiexposed Surfaces: Provide surface materials indicated below:

1. Surfaces Other Than Drawer Bodies: Same species and cut indicated for exposed surfaces.
 2. Drawer Subfronts, Backs, and Sides: Solid-hardwood lumber, same species indicated for exposed surfaces.
 3. Drawer Bottoms: Hardwood plywood.
- F. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.
- G. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

2.5 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.
 2. Wood Moisture Content: 8 to 13 percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
 2. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
 3. Softwood Plywood: DOC PS 1, medium-density overlay.
 4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

2.6 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.

3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
 2. For items indicated to receive a stained or natural finish, use organic resin chemical formulation.
 3. Mill lumber after treatment within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking shop certified by testing and inspecting agency.
 4. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
- C. Fire-Retardant Particleboard: Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E 84.
1. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
 2. For panels 13/16 to 1-1/4 inches thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, 250 and 175 lbf, respectively.
 3. **Products:** Subject to compliance with requirements, provide one of the following:
 - a. [Flakeboard Company Limited](#); Duraflake FR.
 - b. [SierraPine](#); Encore FR.
- D. Fire-Retardant Fiberboard: Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E 84.
1. **Products:** Subject to compliance with requirements, provide one of the following:
 - a. [Panel Source International, Inc.](#); Pyroblock Platinum.
 - b. [SierraPine](#); Medite FR.

2.7 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets. Cabinet and drawer pulls located as indicated on Drawings.

- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening, self-closing.
- C. Back-Mounted Pulls: BHMA A156.9 / See Drawings for Type.
- D. Catches: Magnetic catches, BHMA A156.9, B03141 / Size: 1-3/4" long x 9/16" deep x 1/2" thick / Load Capacity: 5 lbs. Magnetic Catch.
- E. Shelf Rests: BHMA A156.9, B04013; Nickel, two-pin type with shelf hold-down clip / Basis of Design: Hafele / Model: 282.04.712.
- F. Drawer Slides: BHMA A156.9 / Basis of Design: Knappe & Vogt.
 - 1. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides; soft close.
 - 2. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1; soft close.
 - 3. For drawers more than 3 inches high but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100; soft close.
 - 4. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200; soft close.
 - 5. For computer keyboard shelves, provide Grade 1HD-100.
 - 6. For trash bins not more than 20 inches high and 16 inches wide, provide Grade 1HD-200; soft close.
 - 7. For base cabinet roll-out trays, provide Grade 1HD-200; soft close.
- G. Door Locks: BHMA A156.11, E07121 / Basis of Design: Comp X / Model: C8173-26D.
- H. Drawer Locks: BHMA A156.11, E07041 / Basis of Design: Comp X / Model: C8178-26D.
- I. Door and Drawer Silencers: BHMA A156.16, L03011 / Basis of Design: Trimco / Model: 1229B.
- J. Tempered Float Glass for Cabinet Doors: ASTM C 1048, Kind FT, Condition A, Type I, Class 1 (clear), Quality-Q3, 6 mm thick unless otherwise indicated.
- K. Tempered Float Glass for Cabinet Shelves: ASTM C 1048, Kind FT, Condition A, Type I, Class 1 (clear), Quality-Q3; with exposed edges seamed before tempering, 6 mm thick.
- L. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 - 1. As indicated on Drawings.
- M. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.
- N. Sliding Window System: Cowdroy / MKII Sashless Sliding Window System or equal, to be utilized for any sliding pass through window system. Sliding system is to contain a keyed plunger lock for security. The finish is to be anodized aluminum with 6mm tempered glass, clear.

- O. Magnetic Touch Latch Hardware: Rockler Woodworking and Hardware single door magnetic touch latch or equal. Touch latch with 3/8" throw and slotted holes for adjusting. To include strike plate and all hardware for installation.
 - 1. Color: To be selected from manufacturer's standard range.
- P. Adjustable Shelf Standards and Supports: BHMA A156.9, B04102; with shelf brackets B04112. Basis of Design: Knape & Vogt Extra Duty Standards and Brackets; Model #85/185.

2.8 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesives: Do not use adhesives that contain urea formaldehyde.

2.9 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Corners of Cabinets: 1/16 inch unless otherwise indicated.
- C. Complete fabrication, including assembly, finishing, and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 - 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- D. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
- E. Install glass to comply with applicable requirements in Section 088000 "Glazing" and in GANA's "Glazing Manual." For glass in wood frames, secure glass with removable stops.

2.10 SHOP FINISHING

- A. General: Shop finish transparent-finished architectural wood cabinets at fabrication shop as specified in this Section. Refer to Section 099123 "Interior Painting" for field finishing opaque-finished architectural woodwork.
- B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural wood cabinets, as applicable to each unit of work.
 - 1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of cabinets.
- C. Transparent Finish:
 - 1. Grade: Premium.
 - 2. Finish: System - 11, catalyzed polyurethane.
 - 3. Finish: System - 12, water-based polyurethane.
 - 4. Wash Coat for Closed-Grain Woods: Apply wash-coat sealer to cabinets made from closed-grain wood before staining and finishing.
 - 5. Staining: Match approved sample for color.
 - 6. Filled Finish for Open-Grain Woods: After staining, apply wash-coat sealer and allow to dry. Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
 - 7. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D 523.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.
- B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.
- C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing.

- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 2. Maintain veneer sequence matching of cabinets with transparent finish.
 3. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with one of the following:
 - a. No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.
 - b. No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.
- G. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06 41 13

SECTION 06 41 16

PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Plastic-laminate-faced architectural cabinets.
- 2. Wood furring, blocking, shims, and hanging strips for installing plastic-laminate-faced architectural cabinets unless concealed within other construction before cabinet installation.

- B. Related Requirements:

- 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing cabinets and concealed within other construction before cabinet installation.
- 2. Section 12 36 23 "Plastic-Laminate-Clad Countertops."

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including panel products, high-pressure decorative laminate, adhesive for bonding plastic laminate, fire-retardant-treated materials, and cabinet hardware and accessories.

- 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

- 1. Show details full size.
- 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

3. Show locations and sizes of cutouts and holes for electrical switches and outlets and other items installed in architectural plastic-laminate cabinets.

C. Samples for Verification:

1. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish.
2. Wood-grain plastic laminates, 12 by 24 inches, for each type, pattern and surface finish.
3. Exposed cabinet hardware and accessories, one unit for each type and finish.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.
- B. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver cabinets until painting and similar operations that could damage woodwork have been completed in installation areas. If cabinets must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install cabinets until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where cabinets are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 1. Locate concealed framing, blocking, and reinforcements that support cabinets by field measurements before being enclosed, and indicate measurements on Shop Drawings.

- C. Established Dimensions: Where cabinets are indicated to fit to other construction, establish dimensions for areas where cabinets are to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that cabinets can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE-FACED ARCHITECTURAL CABINETS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of architectural plastic-laminate cabinets indicated for construction, finishes, installation, and other requirements.
 - 1. Woodwork, including installation, to meet AWI certification program standards.
 - 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- B. MW-C Custom Millwork (As identified in the interior finish schedule and drawings) – Frameless construction. Fabricated utilizing high pressure laminate premium laminate as a basis of design and cost. Interior is to be white melamine.
- C. Grade: Custom.
- D. Type of Construction: Frameless.
- E. Cabinet, Door, and Drawer Front Interface Style: Flush overlay.
- F. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or if not indicated, as required by woodwork quality standard.
 - 1. **Manufacturers:** Subject to compliance with requirements, provide products by manufacturers indicated on Drawings or comparable product by one of the following:
 - a. [Abet Laminati, Inc.](#)
 - b. [Formica Corporation.](#)
 - c. [Lamin-Art, Inc.](#)
 - d. [Panoram Industries International, Inc.](#)
 - e. [Wilsonart International](#); Div. of Premark International, Inc.
- G. Laminate Cladding for Exposed Surfaces:
 - 1. Horizontal Surfaces: Grade HGS.
 - 2. Vertical Surfaces: Grade HGS.
 - 3. Edges: Grade HGS.

4. Pattern Direction: Vertically for doors and fixed panels, horizontally for drawer fronts, unless otherwise indicated.

H. Materials for Semiexposed Surfaces:

1. Surfaces Other Than Drawer Bodies: High-pressure decorative laminate, NEMA LD 3, Grade VGS.
 - a. Edges of Plastic-Laminate Exposed Shelves: Matching laminate in color, pattern, and finish.
 - b. For semiexposed backs of panels with exposed plastic-laminate surfaces, provide surface of high-pressure decorative laminate, NEMA LD 3, Grade VGS.
2. Drawer Sides and Backs: Solid-hardwood lumber.
3. Drawer Bottoms: Hardwood plywood.

- I. Dust Panels: 1/4-inch plywood or tempered hardboard above compartments and drawers unless located directly under tops.

- J. Concealed Backs of Panels with Exposed Plastic-Laminate Surfaces: High-pressure decorative laminate, NEMA LD 3, Grade BKL.

- K. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.

1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

- L. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:

1. As indicated by laminate manufacturer's designations.

2.2 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Wood Moisture Content: 8 to 13 percent.

- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.

1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
2. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde.
3. Softwood Plywood: DOC PS 1, medium-density overlay.
4. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
 3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
 2. For items indicated to receive a stained or natural finish, use organic resin chemical formulation.
 3. Mill lumber after treatment within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking shop certified by testing and inspecting agency.
 4. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
- C. Fire-Retardant Particleboard: Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E 84.
1. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
 2. For panels 13/16 to 1-1/4 inches thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, 250 and 175 lbf, respectively.
 3. **Products:** Subject to compliance with requirements, provide one of the following:
 - a. [Flakeboard Company Limited](#); Duraflake FR.
 - b. [SierraPine](#); Encore FR.
- D. Fire-Retardant Fiberboard: Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time

of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E 84.

1. **Products:** Subject to compliance with requirements, provide one of the following:
 - a. **Panel Source International, Inc.;** Pyroblock Platinum.
 - b. **SierraPine;** Medite FR.

2.4 CABINET HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets. Cabinet and drawer pulls located as indicated on Drawings.
- B. Frameless Concealed Hinges (European Type): BHMA A156.9, B01602, 170 degrees of opening, self-closing.
- C. Back-Mounted Pulls: BHMA A156.9 / See Drawings for Type.
- D. Catches: Magnetic catches, BHMA A156.9, B03141 / Size: 1-3/4" long x 9/16" deep x 1/2" thick / Load Capacity: 5 lbs. Magnetic Catch.
- E. Shelf Rests: BHMA A156.9, B04013; Nickel, two-pin type with shelf hold-down clip / Basis of Design: Hafele / Model: 282.04.712.
- F. Shelf rests in "Shelf Rests" Paragraph below are installed in holes drilled in cabinet sides and partitions.
- G. Drawer Slides: BHMA A156.9 / Basis of Design: Knappe & Vogt.
 1. Grade 1HD-100 and Grade 1HD-200: Side mounted; full-extension type; zinc-plated-steel ball-bearing slides; soft close.
 2. For drawers not more than 3 inches high and not more than 24 inches wide, provide Grade 1; soft close.
 3. For drawers more than 3 inches high but not more than 6 inches high and not more than 24 inches wide, provide Grade 1HD-100; soft close.
 4. For drawers more than 6 inches high or more than 24 inches wide, provide Grade 1HD-200; soft close.
 5. For computer keyboard shelves, provide Grade 1HD-100.
 6. For trash bins not more than 20 inches high and 16 inches wide, provide Grade 1HD-200; soft close.
- H. Door Locks: BHMA A156.11, E07121 / Basis of Design: Comp X / Model: C8173-26D.
- I. Drawer Locks: BHMA A156.11, E07041 / Basis of Design: Comp X / Model C8178-26D.
- J. Door and Drawer Silencers: BHMA A156.16, L03011 / Basis of Design: Trimco / Model: 1229B.
- K. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 1. As indicated on Drawings.

- L. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.
- M. Magnetic Touch Latch Hardware: Rockler Woodworking and Hardware single door magnetic touch latch or equal. Touch latch with 3/8" throw and slotted holes for adjusting. To include strike plate and all hardware for installation.
 - 1. Color: To be selected from manufacturer's standard range.
- N. Adjustable Shelf Standards and Supports: BHMA A156.9, B04102; with shelf brackets, B04112. Basis of Design: Knape & Vogt Extra Duty Standards and Brackets; Model #85/185.

2.5 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- C. Adhesives: Do not use adhesives that contain urea formaldehyde.
- D. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement, Contact cement, or Resorcinol.
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.6 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate cabinets to dimensions, profiles, and details indicated.
- C. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 - 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- D. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams

to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition cabinets to average prevailing humidity conditions in installation areas.
- B. Before installing cabinets, examine shop-fabricated work for completion and complete work as required.

3.2 INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Assemble cabinets and complete fabrication at Project site to the extent that it was not completed in the shop.
- C. Install cabinets level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing.
- F. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with one of the following:
 - a. No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.
 - b. No. 10 wafer-head sheet metal screws through metal backing or metal framing behind wall finish.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective cabinets, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.
- C. Clean cabinets on exposed and semiexposed surfaces.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 06 41 16

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SECTION 06 42 14

STILE AND RAIL WOOD PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Stile and rail wood paneling (stile and rail wall surfacing).
- 2. Wood furring, blocking, shims, and hanging strips for installing stile and rail wood paneling unless concealed within other construction before paneling installation.

- B. Related Requirements:

- 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing paneling and that are concealed within other construction before paneling installation.
- 2. Section 06 46 00 "Wood Trim" for wood trim installed on or next to stile and rail wood paneling.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: Product Data: For each type of product, including panel products, adhesives, fire-retardant-treated materials, and finishing materials and processes.

- 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

- B. Shop Drawings: Show location of paneling, large-scale details, attachment devices, and other components. Include dimensioned plans and elevations.

- 1. Show details full size.
- 2. Show locations and sizes of furring and blocking, including concealed blocking specified in other Sections.

3. For paneling produced from premanufactured sets, show finished panel sizes, set numbers, sequence numbers within sets, and method of cutting panels to produce indicated sizes.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Fabricator.
- B. Product Certificates: For each type of product.
- C. Evaluation Reports: For fire-retardant-treated materials and fire-retardant-treated paneling, from ICC-ES.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Build mockups of typical paneling as shown on Drawings.
 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver paneling until painting and similar operations that could damage paneling have been completed in installation areas. If paneling must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install paneling until building is enclosed, wet work is complete, and HVAC system is operating and will maintain temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where paneling is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on

Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1. Locate concealed framing, blocking, and reinforcements that support paneling by field measurements before being enclosed and indicate measurements on Shop Drawings.
- C. Established Dimensions: Where paneling is indicated to fit to other construction, establish dimensions for areas where woodwork is to fit. Provide allowance for trimming at site, and coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that paneling can be installed as indicated.

PART 2 - PRODUCTS

2.1 PANELING, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of stile and rail wood paneling (stile and rail wall surfacing) indicated for construction, finishes, installation, and other requirements.
1. Woodwork, including installation, to AWI certification program standards..
 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

2.2 STILE AND RAIL WOOD PANELING FOR OPAQUE FINISH

- A. Grade: Custom.
- B. Wood Species: Poplar.
- C. Provide fire-retardant treatment of stile and rail paneling as indicated below. For components of paneling fabricated from solid lumber, mill pieces before treatment.
1. Stiles and Rails: Fire-retardant-treated lumber or fire-retardant medium-density fiberboard.
 2. Insert Panels: Fire-retardant medium-density fiberboard.
- D. Shop assembled stile and rail paneling into largest units practical for delivery and installation. Provide shop-prepared detachable joints for necessary field connections. Sand and pull joints tight in shop so field joints will comply with joint tolerances for specified grade. Unless otherwise indicated, provide continuous mortise-and-tenon joints between panel units and provide removable temporary protection for joints during handling and delivery.
1. Outside Corner of Stile and Rail Paneling: Shop prepared using lock-mitered or mitered-and-splined construction. Assemble, sand, and glue in shop if site conditions permit.

2.3 MATERIALS

- A. Materials, General: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.
- B. Wood Moisture Content: 8 to 13 percent.
- C. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each quality grade specified unless otherwise indicated.
 - 1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
 - 2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.
- D. Adhesives: Do not use adhesives that contain urea formaldehyde.

2.4 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
 - 1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
 - 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
 - 3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 - 1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
 - 2. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
- C. Fire-Retardant Fiberboard: Medium-density fiberboard panels complying with ANSI A208.2, made from softwood fibers, synthetic resins, and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 200 or less per ASTM E 84.
 - 1. **Products:** Subject to compliance with requirements, provide one of the following:

- a. [Panel Source International, Inc.](#), McKillican America, Inc.; Pyroblock Platinum.
- b. [SierraPine](#); Medite FR.

2.5 INSTALLATION MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls.
- C. VOC Limits for Installation Adhesives: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 1. Wood Glues: 30 g/L.
 2. Multipurpose Construction Adhesives: 70 g/L.
 3. Contact Adhesive: 80 g/L.
 4. Special-Purpose Contact Adhesive (contact adhesive that is used to bond melamine-covered board, metal, unsupported vinyl, rubber, or wood veneer 1/16 inch or less in thickness to any surface): 250 g/L.

2.6 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Complete fabrication, including assembly, to maximum extent possible, before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 1. Notify Architect seven days in advance of the dates and times paneling fabrication will be complete.
 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements indicated on approved Shop Drawings before disassembling for shipment.
- C. Shop cut openings, to maximum extent possible, to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition paneling to average prevailing humidity conditions in installation areas.
- B. Before installing paneling, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install paneling to comply with same grade as paneling to be installed.
- B. Install paneling level, plumb, true, and straight with no distortions. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches. Install with no more than 1/16 inch in 96-inch vertical cup or bow and 1/8 inch in 96-inch horizontal variation from a true plane.
- C. Scribe and cut paneling to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- D. Anchor paneling to supporting substrate with blind nailing. Do not use face fastening unless covered by trim or otherwise indicated.
- E. Refer to Section 09 91 23 "Interior Painting" for final finishing of installed paneling.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective paneling, where possible, to eliminate defects; where not possible to repair, replace paneling. Adjust for uniform appearance.
- B. Clean paneling on exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06 42 14

SECTION 06 46 00

WOOD TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Interior standing and running trim.
- 2. Wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

- B. Related Requirements:

- 1. Section 06 10 53 "Miscellaneous Rough Carpentry" for wood furring, blocking, and shims required for installing wood trim and concealed within other construction before wood trim installation.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, including panel products and fire-retardant-treated materials.

- 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.

- 1. Show details full size.
- 2. Show locations and sizes of furring, blocking, and hanging strips, including concealed blocking and reinforcement specified in other Sections.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For fabricator.

- B. Product Certificates: For each type of product.

- C. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of products.
- C. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant-treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups of typical wood trim as shown on Drawings.
 - 2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver wood trim until operations that could damage wood trim have been completed in installation areas. If wood trim must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

- A. Environmental Limitations for Interior Work: Do not deliver or install interior wood trim until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

1.8 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that wood trim can be supported and installed as indicated.

PART 2 - PRODUCTS

2.1 WOOD TRIM, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades of wood trim indicated for construction, finishes, installation, and other requirements.
 - 1. Woodwork, including installation, to meet AWI certification program standards.

2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.

2.2 INTERIOR STANDING AND RUNNING TRIM FOR OPAQUE FINISH

- A. Grade: Custom.
- B. Wood Species: Any closed-grain hardwood or MDF (Medium Density Fiber Board)

2.3 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of wood trim and quality grade specified unless otherwise indicated.
 1. Wood Moisture Content for Interior Materials: 8 to 13 percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of wood trim and quality grade specified unless otherwise indicated.
 1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde.
 2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1, made with adhesive containing no urea formaldehyde.

2.4 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
 1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
 3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant-Treated Lumber: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
 1. Kiln dry lumber after treatment to a maximum moisture content of 19 percent.
 2. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from

drying sticks or other causes, marring, and other defects affecting appearance of treated
woodwork.

2.5 HARDWARE AND ACCESSORIES

- A. Adjustable Shelf Standards and Supports: BHMA A156.9, B04102; with shelf brackets, B04112. Basis of Design: Knape & Vogt Extra Duty Standards and Brackets; Model #85/185.
- B. Concealed Shelving Supports: Basis of Design: Hafele Concealed Shelf Support; Model #283.33.904.

2.6 MISCELLANEOUS MATERIALS

- A. Interior Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln dried to less than 15 percent moisture content.
- B. Provide self-drilling screws for metal-framing supports, as recommended by metal-framing manufacturer.
- C. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- D. Adhesives: Do not use adhesives that contain urea formaldehyde.
- E. VOC Limits for Installation Adhesives and Sealants: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Wood Glues: 30 g/L.
 - 2. Multipurpose Construction Adhesives: 70 g/L.
 - 3. Structural Wood Member Adhesive: 140 g/L.
 - 4. Architectural Sealants: 250 g/L.

2.7 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate wood trim to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 - 1. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
- C. Backout or groove backs of flat trim members and kerf backs of other wide, flat members except for members with ends exposed in finished work.
- D. Assemble casings in shop except where shipping limitations require field assembly.

- E. Assemble moldings in shop to maximum extent possible. Miter corners in shop and prepare for field assembly with bolted fittings designed to pull connections together.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition wood trim to average prevailing humidity conditions in installation areas.
- B. Before installing architectural wood trim, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install wood trim to comply with same grade as item to be installed.
- B. Assemble wood trim and complete fabrication at Project site to the extent that it was not completed in the shop.
- C. Install wood trim level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut wood trim to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- F. Anchor wood trim to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.
- G. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to greatest extent possible. Do not use pieces less than 60 inches long except where shorter single-length pieces are necessary. Scarf running joints and stagger in adjacent and related members.
 - 1. Fill gaps, if any, between top of base and wall with latex sealant, painted to match wall.
 - 2. Install standing and running trim with no more variation from a straight line than 1/8 inch in 96 inches.
- H. Touch up finishing work specified in this Section after installation of wood trim. Fill nail holes with matching filler where exposed.
- I. Refer to Section 09 91 23 "Interior Painting" for final finishing of installed wood trim.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective wood trim, where possible, to eliminate functional and visual defects; where not possible to repair, replace wood trim. Adjust joinery for uniform appearance.
- B. Clean wood trim on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 06 46 00

SECTION 06 63 00

DECORATIVE PLASTIC RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes exterior cellular PVC railings reinforced with aluminum extrusions.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for placement of supports and wood blocking for anchors for railings.

1.3 REFERENCE STANDARDS

- A. ASTM B429 – Standard Specification for Aluminum Alloy Extruded Structural Pipe and Tube.
- B. ASTM D1784 - Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds; 2011.
- C. ASTM D7032 - Standard Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails; 2017.
- D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2018b.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.
- C. Samples: Submit two, 12 inch long samples of handrail. Submit two samples of connecting balusters, and post caps.
- D. Manufacturer's Qualification Statement.
- E. Installer's Qualification Statement.

- F. Manufacturer's Instructions.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with at least five years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified in this section, with at least three years of documented experience.
- C. Professional Engineering Responsibility: Prepare data for railing and handrail systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in systems similar to those indicated for this Project.
- D. Source Limitations for Railing and Handrail Systems: Obtain each type of railing from single source from single manufacturer.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Verify railing and handrail dimensions by field measurements before fabrication and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Comply with manufacturer's recommendations. Handle materials to avoid damage.

1.8 COORDINATION

- A. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- B. Schedule installation so wall attachments are made with completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.9 WARRANTY

- A. Manufacturer's Product Warranty: Provide manufacturer's limited lifetime warranty.
 - 1. Warranty shall include defects in manufacturing that cause products to:
 - a. Rot.
 - b. Corrode.
 - c. Delaminate.
 - d. Splinter or split.

- e. Structural damage from termites or fungus.
 - f. Excessively swell from moisture.
2. Warranty Period: 30 Years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
- 1. Wolf Home Products; Wolf Railing System with Deck Board Top Rail and Round Balusters.

2.2 PLASTIC AND ALUMINUM RAILING SYSTEM

- A. Performance Requirements:
- 1. Distributed Loads: Design railing assembly, wall rails, and attachments to resist distributed force of 50 pounds per linear foot applied to the top of the assembly and in any direction.
 - 2. Concentrated Loads: Design railing assembly, wall rails, and attachments to resist a concentrated force of 200 pounds applied at any point on the top of the assembly and in any direction.
 - 3. Design Requirements:
 - a. Allow for expansion and contraction of members and building movement without damage to connections or members.
 - b. Provide anchors and other components as required to attach to structure; where exposed fasteners are unavoidable provide flush countersunk fasteners.

2.3 RAILING COMPONENTS

- A. Rail Profiles: Top and bottom rails shall be pre-routed with holes to receive selected baluster material or un-routed if Deluxe Series balusters are selected by the Architect.
- 1. Traditional Style
- B. PVC Color: White.
- C. Railing Infill Materials:
- 1. Classic Series Baluster Materials:
 - a. Color: Black.
- D. Post, Post Sleeves, and Trim: Provide posts, trim, and caps as required to complete installation:
- 1. Structural Posts: Colonial structural post.
 - 2. Post Sleeve Size: As required to fit wood posts.
 - 3. Post Trim: Provide 1 piece post trim unless otherwise indicated on the Drawings.

- E. Post Cap Style: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
- F. Rail Brackets and Mounting Hardware: Provide manufacturers mounting brackets to match railing configurations and required to complete the installation. Brackets shall be complete with cover plates and fasteners.
- G. Exposed Fasteners: No exposed bolts or screws once trim has been installed.
- H. Top Rail: Composite decking material in color and texture to be selected by Architect.

2.4 MATERIALS

- A. Plastic Railing Components: Capped cellular PVC plastic with no cellulose fiber molded into solid shapes in standard railing sizes and profiles.
 - 1. Poly Vinyl Chloride (PVC); Impact-resistant and ultraviolet (UV) stable extruded product; comply with ASTM D1784.
 - 2. Surface Burning Characteristics: Flame spread index of 200, maximum; when tested in accordance with ASTM E84.
- B. Aluminum Reinforcement for Rails:
 - 1. Aluminum extrusions; alloy and temper 6063-T5 or 6063-T6 complying with ASTM B429/B429M.

2.5 FASTENERS AND ANCHORS

- A. Fasteners for Anchoring Railings and Handrails to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
- B. Fasteners for Interconnecting Railing and Handrail Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
 - 2. Provide Phillips flat-head stainless steel or aluminum machine screws for exposed fasteners unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine wood stud wall assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements have been clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 FABRICATION AND WORKMANSHIP

- A. Vinyl surfaces shall be clean and well-formed and finished to shape and size, true to details with straight, sharp lines and angles and smooth surfaces. Curved work shall be to true radii.
- B. Fabricate handrails to design, dimensions and details shown on Drawings and approved submittals. Provide handrail members in sizes and profiles indicated, with supporting posts and brackets of size and spacing shown, but not less than required to support specified design.
- C. Make connections by means of railing manufacturer's standard mechanical fasteners and fittings unless otherwise indicated. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints. Fabricate splice joints for filed connection using manufacturer's standard splicing method.
- D. Fastenings shall be concealed where practical. Thickness of vinyl and details of assembly and supports shall provide code-required strength and stiffness. Joints exposed to weather shall be formed to exclude water.
- E. Live loads shall be not less than the minimum required by applicable codes. Design and construction shall be such as to assure that under design live loads there shall be no failure of any member or connection, deflection of not more than L/360 of length of any member, and without permanent deformation of any member or fastener.

3.3 INSTALLATION, GENERAL

- A. Install according to manufacturer's written instructions and instruction video.
- B. Fit exposed connections together to form tight, hairline joints.
- C. Perform cutting, drilling, and fitting required to install railings. Later cutting and drilling shall be avoided where possible. Set railings accurately in location, alignment, and elevation; measure from established lines and levels and free of rack.
 - 1. Do not cut or abrade surfaces of railing components that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.
- F. Work shall be rigidly braced and secured to surrounding construction, and shall be tight and free of rattle, vibration, or noticeable deflection after installation.

3.4 FLAT RAILINGS

- A. Posts:
 - 1. Install all flat railing wood posts to a height of 36 inches above finished floor or deck and check for level and plumb.

2. Install post sleeve by slipping over wood post and attaching it to the post using deck screw.
3. Install trim rings on all posts before installing railing sections.

B. Measuring and Cutting Rails:

1. Cut spacer blocks from scrap of the appropriate height to achieve 36 inch high railing. Coordinate spacer size with manufacturer's directions based on type of balusters being installed. Place spacers on decking between posts.
2. Place the bottom rail across the opening where the railing is to be installed. Allowing at least 1-1/4 inch from the end of the bottom rail to the first picket hole, adjust your measurements until each end is equal.
3. Mark your measurements onto the rail 1/8 inch short to allow for expansion.
4. Making sure your measurements are correct, transfer your marks onto the top rail by laying the bottom and top rails together with the baluster holes lined up to one another.
5. Using a circular or compound miter saw cut each end of the bottom and top rails to correct length. Top rail includes aluminum reinforcing, cut plastic rail and internal aluminum reinforcing at the same time do not separate.

C. Assembling Railing:

1. Place the bottom mounting brackets onto the bottom rail at each end making sure the flat side is facing the mounting surface. For rails 6 foot long and longer install crush blocks in the holes routed in the bottom of the bottom rail. Refer to manufacturer recommendations for the quantity of crush blocks based on rail length.
2. Support bottom rail on top of the spacer blocks, slide the brackets up to the mounting surface of the post. Secure bracket to the post using any 4 holes on the brackets. Pre-drill screw pilot holes is recommended but not required.
3. Insert each baluster into the holes of the bottom rail.
4. Place the mounting bracket onto each end of the top rail, making sure the flat side is facing the mounting surface of the post.
5. Starting at one end of the railing section, insert each baluster into the matching hole of the top rail.
6. Secure the top rail brackets to post in the same manner as bottom rail using the screws provided.
7. Each bracket set contains 2 set screws to secure bracket to aluminum reinforcing in the rail. Pre-drill through the top and one side of each bracket on the bottom rail and through the bottom and one side of each bracket on the top rail. Secure the rail in place using the supplied set screws.
8. Check your installation for accuracy before snapping the decorative screw covers of each bracket into place. Snap decorative covers into place.

3.5 ATTACHING POST CAPS

- A. Apply a dab of silicone on the top four corners of the post sleeve.
- B. Allow silicone to cure for 24 hours.

3.6 CLEANING

- A. Clean surfaces according to manufacturer's written instructions.
- B. Clean of all marks, stamps, tags, and labels. Wipe clean all dirt and residue.

3.7 PROTECTION

- A. Protect installed work from subsequent construction operations. Repair damaged surfaces. Remove and replace work which cannot be repaired.

END OF SECTION 06 63 00

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SECTION 06 64 00

PLASTIC PANELING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes glass-fiber-reinforced plastic paneling.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For adhesives and sealants, indicate VOC content in g/L.
- B. Samples: For plastic paneling and trim accessories, in manufacturer's standard sizes.

1.4 QUALITY ASSURANCE

- A. Testing Agency: Acceptable to authorities having jurisdiction.

1.5 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install plastic paneling until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain plastic paneling and trim accessories from single manufacturer.

2.2 PLASTIC SHEET PANELING

- A. Glass-Fiber-Reinforced Plastic Paneling: Gelcoat-finished, glass-fiber-reinforced plastic panels complying with ASTM D5319.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Crane Composites, Inc.; GLASBORD Wall Panels with Surfaseal Finish or a comparable product by one of the following:
 - a. Glasteel.
 - b. Marlite.
 - c. Newcourt, Inc.
 - d. Nudo Products, Inc.
 - e. Parkland Plastics, Inc.
2. Surface-Burning Characteristics: As follows when tested by a qualified testing agency according to ASTM E84. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
3. Nominal Thickness: Not less than 0.075 inch.
4. Surface Finish: As selected by Architect from manufacturer's full range.
5. Color: As selected by Architect from manufacturer's full range.

2.3 ACCESSORIES

- A. Trim Accessories: Manufacturer's standard one-piece vinyl extrusions designed to retain and cover edges of panels. Provide division bars, inside corners, outside corners, and caps as needed to conceal edges.
 1. Color: Match panels.
- B. Adhesive: As recommended by plastic paneling manufacturer.
 1. Verify gypsum board and panel adhesives have a VOC content of 50 g/L or less.
- C. Sealant: Mildew-resistant, single-component, neutral-curing or acid-curing silicone sealant recommended by plastic paneling manufacturer and complying with requirements in Section 07 92 00 "Joint Sealants."
 1. Verify sealant has a VOC content of 250 g/L or less.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrate by sanding high spots and filling low spots as needed to provide flat, even surface for panel installation.

- B. Clean substrates of substances that could impair adhesive bond, including oil, grease, dirt, and dust.
- C. Condition panels by unpacking and placing in installation space before installation according to manufacturer's written recommendations.
- D. Lay out paneling before installing. Locate panel joints to provide equal panels at ends of walls not less than half the width of full panels.
 - 1. Mark plumb lines on substrate at trim accessory locations for accurate installation.
 - 2. Locate trim accessories to allow clearance at panel edges according to manufacturer's written instructions.

3.3 INSTALLATION

- A. Install plastic paneling according to manufacturer's written instructions.
- B. Install panels in a full spread of adhesive.
- C. Install trim accessories with adhesive.
- D. Fill grooves in trim accessories with sealant before installing panels, and bed inside corner trim in a bead of sealant.
- E. Maintain uniform space between panels and wall fixtures. Fill space with sealant.
- F. Remove excess sealant and smears as paneling is installed. Clean with solvent recommended by sealant manufacturer and then wipe with clean dry cloths until no residue remains.

END OF SECTION 06 64 00

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SECTION 06 65 00

PLASTIC SIMULATED WOOD TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes cellular PVC soffit boards with wood-grained finish.

1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials, dimensions, profiles, textures, and colors and include construction and application details.
- B. Samples: For each exposed product and for each color and texture specified.

1.6 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For the following, from ICC-ES:
 - 1. Cellular PVC products.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer with a minimum of 5 years producing PVC trim products.
- B. Installer Qualifications: Installer with a minimum of 3 years experience with the installation of PVC trim products.
- C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.
2. DO not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.
4. Accepted mock-ups shall be comparison standard for remaining work.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store products on a flat and level surface on a full shipping pallet. Handle materials to prevent damage to product edges and corners.
- B. Store materials under a protective covering to prevent jobsite dirt and residue from collecting on the boards.

1.9 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.10 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.11 WARRANTY

- A. Provide manufacturer's transferable limited lifetime warranty against defects in manufacturing that causes the products to rot, corrode, delaminate, or excessively swell from moisture.

PART 2 - PRODUCTS

2.1 PLASTIC SOFFIT

- A. Products: Subject to compliance with requirements, provide the following:
 1. Versatex Building Products, LLC; Canvas Series Tongue and Groove Cellular PVC Trim Boards.
- B. Cellular PVC Soffit: Free foam cellular PVC material with a small-cell microstructure, and density of 0.55 grams/cu. cm.
 1. Performance and Physical Characteristic Requirements:
 - a. Physical:
 - 1) Density: 0.55 g/cu. cm. when tested in accordance with ASTM D792.
 - 2) Water Absorption: Less than 0.50 percent when tested in accordance with ASTM D570.

b. Mechanical:

- 1) Tensile Strength: 3582 psi when tested in accordance with ASTM D638.
- 2) Tensile Modulus: 107,000 psi when tested in accordance with ASTM D638.
- 3) Flexural Strength: 5179 psi when tested in accordance with ASTM D790.
- 4) Flexural Modulus: 215,600 psi when tested in accordance with ASTM D790.
- 5) Modulus of Elasticity: 209,500 psi when tested in accordance with ASTM D638.
- 6) Elongation: 9.0 percent when tested in accordance with ASTM D638.
- 7) Nail Hold: 398 lbf/in of penetration when tested in accordance with ASTM D1761.
- 8) Compressive Strength: 6,553 psi (thickness dependent).
- 9) Compressive Modulus: 2,305 lbf/in (thickness dependent).
- 10) Screw Hold: 240 lbf/in of penetration when tested in accordance with ASTM D1761.
- 11) Staple Hold: 69 lbf/in of penetration when tested in accordance with ASTM D1761.
- 12) Gardner Impact: 34 In-lbs when tested in accordance with ASTM D5420.
- 13) Notched Izod Impact: 0.270 Ft-lbs/inch when tested in accordance with ASTM D256.
- 14) Termite Resistance: Rating of 10 as tested when tested in accordance with ASTM D2245.
- 15) Hardness: 60+ when tested in accordance with ASTM D2240.

c. Thermal:

- 1) Coefficient of Linear Expansion: 3.25×10^{-5} in/in/degrees F when tested in accordance with ASTM D696.
- 2) Burning Rate: Failed to ignite when tested in accordance with ASTM D635
- 3) Flame Spread Index: 20 when tested in accordance with ASTM E84.
- 4) Heat Deflection Temp (264 psi): 146 degrees F when tested in accordance with ASTM D648.
- 5) Heat Deflection Temp (66 psi): 153 degrees F when tested in accordance with ASTM D648.
- 6) Oli Canning (@ 140 degrees F): Passed when tested in accordance with ASTM D648.

2. Manufacturing Tolerances:

- a. Variation in Component Length: Minus 0.00 / plus 1.00.
- b. Variation in Component Width: Plus or minus 1/32 inch.
- c. Variation in Component Thickness: Plus or minus 1/32 inch.
- d. Variation in Component Edge Cut: Plus or minus 2 degrees.
- e. Variation in Density: Plus or minus 0.02 grams per cubic centimeter.

3. Workmanship, Finish, and Appearance:

- a. Free Foam Cellular PVC that is homogeneous and free of voids, holes, cracks, foreign inclusions and other defects. Edges must be square and top and bottom surfaces shall be flat with no convex or concave deviation.
- b. Uniform surface free from cupping, warping, and twisting.

4. Profile: WP4.
5. Actual Size: 3/4 inch by 5-7/16 inch.
6. Length: 18 feet.

7. Color/Texture: Amber.
8. Ventilation: Where indicated on Drawings, provide ventilated soffit with a minimum net free area of 10 sq. in. per lineal foot.

2.2 MISCELLANEOUS MATERIALS

A. Fasteners:

1. Use 12 gauge stainless steel fasteners designed for wood trim and siding. Fastener should have sufficient flexural and tensile strength to resist bending.
2. Use fasteners with thin shanks, blunt points, and full round heads that are long enough to penetrate the substrate a minimum of 1-1/4 inches.
3. Do not use staples, small brads and wire nails. Avoid using fine threaded wood screws and ring-shank fasteners.
4. Use standard nail guns with a pressure setting between 70 psi and 100 psi. The recommended pressure depends on the type of gun, type of nail, ambient temperature, and the substrate. Care should be taken not to overdrive the nail into the material.
5. Pre-drilling is not typically required unless large fasteners are used or the product is installed during temperatures below 40 degrees F.
6. Use two fasteners for every framing member for trimboard applications. Sheet and trimboards 8 inches and wider require additional fasteners.
7. Install fastener no more than 2 inches from the end of each board.
8. Avoid fastening simulated wood trim over hollow or uneven areas. Fasten onto flat, solid substrates.
9. 3/8 inch and 1/2 inch thick sheet and beadboard is not designed to be ripped and used for trim applications. These products must be glued and mechanically fastened to the substrate.

B. Adhesives: Finishing System.

1. All bonded surfaces must be smooth, clean, and in complete contact with each other for best results.
2. Adhere simulated wood trim to itself with PVC cement or cellular PVC adhesives to prevent joint separation. Acceptable adhesives are PVC Trim Welder, IPS Weld-On 705 (white), and Zevo PVC Trim adhesive.
3. PVC cements cure quickly (3-5 minutes or less), and have a limited working time.
4. Scarf cut joints are recommended where applicable.
5. Bonded joints should be secured with fasteners and fastened with two rows on each side of the joint.
6. When bonding simulated wood trim to other substrates, consult the adhesive manufacturer to determine suitability.

C. Nail Hole Filler: Cortex plug system by Fasten Master.

D. Sealants:

1. Use urethane, polyurethane, polymer blends or acrylic based sealants that do not contain silicone.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Cutting:
 - 1. Simulated wood trim can be cut using standard woodworking saws. Conventional carbide-tipped blades designed for cutting wood are preferred. Avoid using fine-tooth metal-cutting blades.
 - 2. Rough-cut edges are typically caused by excessive friction, poor board support, or worn or improper tooling.
- C. Drilling:
 - 1. Simulated wood trim can be drilled using standard woodworking drill bits. Do not use drill bits made from rigid PVC.
 - 2. Avoid frictional heat build-up.
 - 3. Remove shavings periodically from a drill hole as necessary.
- D. Milling and Moulding:
 - 1. Simulated wood trim can be milled or moulded using standard milling or moulding machines found in millwork shops.
 - 2. Rake angle 20 to 30 degrees, 25 degrees is recommended.
 - 3. Cutting speed to be optimized with the number of knives and feed rate.
- E. Routing:
 - 1. Simulated wood trim can be routed with virtually any piece of equipment used to rout wood.
 - 2. Carbide tipped router bits are recommended.
 - 3. Machinery that allows for multiple cutting speeds will allow you to optimize the process obtaining a smoother finished part.
- F. Edge Finishing:
 - 1. Traditional sanding, grinding or filing tools used for woodworking are preferred.
- G. Nail Location:
 - 1. For trimboard applications, use two fasteners per framing member.

2. Use additional fasteners (3/4 inch preferred) for trimboard 8 inches and wider.
3. Install fasteners a maximum of 2 inches from the end of each board.

H. Expansion and Contraction:

1. Simulated wood trim expands and contracts with changes in temperature. Properly fastening along the entire length is required to minimize expansion and contraction.
2. Allow 3/16 inch space per 18-foot run of trim for expansion and contraction.
3. Bond joints between pieces of simulated wood trim to eliminate separation.
4. Allow expansion and contraction space at the ends of long runs,

I. Cleaning:

1. Clean simulated wood trim with mild detergent and water.
2. Products with pumice, such as Soft Scrub, may be applied with a nylon brush.
3. For more stubborn stains use a mild household cleaner and degreaser like Clorox Cleanup, Clorox Outdoors, Denatured Alcohol, Bleach, Mr. Clean Magic Eraser or Corte Clean with nylon brush.

J. Painting:

1. Be sure surface to be painted is clean, dry, and free of dirt, loose or peeling paint, mildew, chalk, grease and any other surface contaminants before paint application.
2. Finish nail holes with nail hole filler or a UV resistant acrylic caulk.
3. Paint as specified in Section 09 91 13 "Exterior Painting."
 - a. Use 100 percent acrylic latex or 90 percent acrylic latex with urethane additive paint with a light reflectance value (LRV) equal to or greater than 55 units.
 - b. Follow the paint manufacturer's application recommendations.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 06 65 00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 13 26	SELF-ADHERING SHEET WATERPROOFING
07 13 53	ELASTOMERIC SHEET WATERPROOFING
07 21 00	THERMAL INSULATION
07 21 19	FOAMED-IN-PLACE INSULATION
07 25 00	WEATHER BARRIERS
07 31 13	ASPHALT SHINGLES
07 41 13.16	STANDING-SEAM METAL ROOF PANELS
07 46 46	FIBER-CEMENT SIDING
07 54 23	THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING
07 62 00	SHEET METAL FLASHING AND TRIM
07 71 29	ROOF EXPANSION JOINTS
07 72 00	ROOF ACCESSORIES
07 72 53	SNOW GUARDS
07 81 00	APPLIED FIRE PROTECTION
07 81 23	INTUMESCENT FIRE PROTECTION
07 84 13	PENETRATION FIRESTOPPING
07 84 43	JOINT FIRESTOPPING
07 92 00	JOINT SEALANTS
07 92 19	ACOUSTICAL JOINT SEALANTS
07 95 13.13	INTERIOR EXPANSION JOINT COVER ASSEMBLIES
07 95 13.16	EXTERIOR EXPANSION JOINT COVER ASSEMBLIES

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SECTION 07 13 26

SELF-ADHERING SHEET WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Modified bituminous sheet waterproofing.
2. Blindsight sheet waterproofing.
3. Protection course.
4. Molded-sheet drainage panels.

- B. Related Requirements:

1. Section 07 13 53 "Elastomeric Sheet Waterproofing" for EPDM rubber sheet waterproofing at balconies.
2. Section 07 95 13.16 "Exterior Expansion Joint Cover Assemblies" for exterior-wall expansion-joint assemblies that interface with waterproofing.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.

- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, expansion joints, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Field quality-control reports.
- C. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
 - 1. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.8 WARRANTY

- A. Manufacturer's Warranty:
 - 1. Waterproofing Warranty: Manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
 - a. Warranty Period: 10 years from date of Substantial Completion.
- B. Installer's Special Warranty: Specified form, signed by Installer, covering Work of this Section, for warranty period of 10 years.
 - 1. Warranty includes removing and reinstalling protection board, drainage panels, insulation, if accessible, or providing waterproofing repair from interior of building.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Waterproofing System: Obtain waterproofing materials, protection course, and molded-sheet drainage panels from single source from single manufacturer.

2.2 MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Modified Bituminous Sheet Waterproofing: Minimum 60-mil nominal thickness, self-adhering sheet consisting of 56 mils of rubberized asphalt laminated on one side to a 4-mil-thick,

polyethylene-film reinforcement, and with release liner on adhesive side; formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.

1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies Inc.; Bituthene 3000 or a comparable product by one of the following:
 - a. American Hydrotech, Inc.
 - b. Carlisle Coatings & Waterproofing Inc.
 - c. CETCO, a Minerals Technologies company.
 - d. Henry Company.
 - e. Polyguard Products, Inc.
 - f. Soprema, Inc.
 - g. W.R. Meadows, Inc.
2. Physical Properties:
 - a. Tensile Strength, Membrane: 250 psi minimum; ASTM D412, Die C, modified.
 - b. Ultimate Elongation: 300 percent minimum; ASTM D412, Die C, modified.
 - c. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D1970/D1970M.
 - d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch movement; ASTM C836/C836M.
 - e. Puncture Resistance: 40 lbf minimum; ASTM E154/E154M.
 - f. Water Absorption: 0.2 percent weight-gain maximum after 48-hour immersion at 70 deg F; ASTM D570.
 - g. Water Vapor Permeance: 0.05 perm maximum; ASTM E96/E96M, Water Method.
 - h. Hydrostatic-Head Resistance: 200 feet minimum; ASTM D5385.
3. Sheet Strips: Self-adhering, rubberized-asphalt strips of same material and thickness as sheet waterproofing.

2.3 BLINDSIDE SHEET WATERPROOFING

- A. Blindside Sheet Waterproofing for Vertical Applications: Uniform, flexible, multilayered-composite sheet membrane that forms a permanent bond with fresh concrete placed against it; complete with accessories and preformed shapes for an unbroken waterproofing assembly; with the following physical properties:
 1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies Inc.; Preprufe Plus or a comparable product by one of the following:
 - a. Carlisle Coatings & Waterproofing Inc.
 - b. Polyguard Products, Inc.
 - c. W.R. Meadows, Inc.
 2. Physical Properties:
 - a. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D1970/D1970M.
 - b. Peel Adhesion to Concrete: 5 lbf/in. minimum; ASTM D903, modified.
 - c. Lap Adhesion: 5 lbf/in. minimum; ASTM D1876, modified.
 - d. Hydrostatic-Head Resistance: 230 feet; ASTM D5385, modified.
 - e. Puncture Resistance: 100 lbf minimum; ASTM E154/E154M.
 - f. Water Vapor Permeance: 0.1 perm maximum; ASTM E96/E96M, Water Method.
 - g. Ultimate Elongation: 335 percent minimum; ASTM D412, modified.

- B. Blindsight Sheet Waterproofing for Horizontal Applications: Uniform, flexible, multilayered-composite sheet membrane that forms a permanent bond with fresh concrete placed against it; complete with accessories and preformed shapes for an unbroken waterproofing assembly; with the following physical properties:
1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies Inc.; Preprufe Plus or a comparable product by one of the following:
 - a. Carlisle Coatings & Waterproofing Inc.
 - b. Polyguard Products, Inc.
 - c. W.R. Meadows, Inc.
 2. Physical Properties:
 - a. Low-Temperature Flexibility: Pass at minus 20 deg F; ASTM D1970/D1970M.
 - b. Peel Adhesion to Concrete: 5 lbf/in. minimum; ASTM D903, modified.
 - c. Lap Adhesion: 5 lbf/in. minimum; ASTM D1876, modified.
 - d. Hydrostatic-Head Resistance: 230 feet; ASTM D5385, modified.
 - e. Puncture Resistance: 200 lbf minimum; ASTM E154/E154M.
 - f. Water Vapor Permeance: 0.1 perm maximum; ASTM E96/E96M, Water Method.
 - g. Ultimate Elongation: 335 percent minimum; ASTM D412, modified.
- C. Mastic, Adhesives, and Detail Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.

2.4 AUXILIARY MATERIALS

- A. Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Primer: Liquid primer recommended for substrate by sheet waterproofing material manufacturer.
- C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by sheet waterproofing material manufacturer.
- D. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, of trowel grade or low viscosity.
- E. Substrate Patching Membrane: Low-viscosity, two-component, modified asphalt coating.
- F. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch, predrilled at 9-inch centers.
- G. Protection Course, Asphaltic: ASTM D6506, semirigid sheets of fiberglass or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:
1. Thickness: Nominal 1/8 inch.
 2. Adhesive: Rubber-based solvent type recommended by waterproofing manufacturer for protection course type.

2.5 MOLDED-SHEET DRAINAGE PANELS

- A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel with Polymeric Film: Composite subsurface drainage panel acceptable to waterproofing manufacturer and consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 21 gpm per ft.
1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies Inc.; Hydroduct 220 or a comparable product by one of the following:
 - a. American Hydrotech, Inc.
 - b. Carlisle Coatings & Waterproofing Inc.
 - c. CETCO, a Minerals Technologies company.
 - d. Polyguard Products, Inc.
- B. Molded-Sheet Collector-Panel System with Polymeric Film: Composite subsurface collector-panel system by same manufacturer as primary molded-sheet drainage panels; consisting of a high-profile, studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven-geotextile facing with an apparent opening size not exceeding No. 40 sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of 9 to 17 gpm per ft. and a minimum horizontal, in-plane flow rate as indicated on Drawings. Provide system with manufacturer's outlets, connectors, tapes, and other accessories to connect primary molded-sheet drainage panels with piped subdrainage system.
1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies Inc.; Hydroduct Coil 600 or a comparable product by one of the following:
 - a. Polyguard Products, Inc.
- C. Molded-Sheet Collector-Panel System Wrapped with Geotextile: Composite subsurface collector-panel system by same manufacturer as primary molded-sheet drainage panels; consisting of a high-profile, studded, nonbiodegradable, molded-plastic-sheet drainage core; wrapped with a nonwoven-geotextile facing with an apparent opening size not exceeding No. 40 sieve; and with a vertical flow rate through the core of 21 to 97 gpm per ft. and a minimum horizontal, in-plane flow rate as indicated on Drawings. Provide system with manufacturer's outlets, connectors, tapes, and other accessories to connect primary molded-sheet drainage panels with piped subdrainage system.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. Carlisle Coatings & Waterproofing Inc.; CCW MiraDRAIN HC.
 - b. CETCO, a Minerals Technologies company; Aquadrain 100BD.
 - c. W.R. Meadows, Inc.; Total-Drain.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing.

1. Verify that concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D4263.
3. Verify that compacted subgrade is dry, smooth, sound, and ready to receive waterproofing sheet.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections.
- E. Fill form tie holes, honeycomb, aggregate pockets, holes, and other voids.
- F. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D4258.
 1. Install sheet strips of width according to manufacturer's written instructions and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch.
- G. Bridge and cover isolation joints, expansion joints, and discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips of widths according to manufacturer's written instructions.
 1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.
- H. Corners: Prepare, prime, and treat inside and outside corners in accordance with manufacturer's instructions.
 1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
 - a. At footing-to-wall intersections, extend liquid membrane in each direction from corner or install membrane strip centered over corner.
- I. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions.

3.3 INSTALLATION OF MODIFIED BITUMINOUS SHEET WATERPROOFING

- A. Install modified bituminous sheets according to waterproofing manufacturer's written instructions.
- B. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.
- C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch-minimum lap widths and end laps. Overlap and seal seams, and stagger end laps to ensure watertight installation.
 - 1. When ambient and substrate temperatures range between 25 and 40 deg F, install self-adhering, modified bituminous sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperature is higher than 60 deg F.
- D. Apply continuous sheets over already-installed sheet strips, bridging substrate cracks, construction, and contraction joints.
- E. Seal edges of sheet waterproofing terminations with mastic.
- F. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing.
- G. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending 6 inches beyond repaired areas in all directions.
- H. Immediately install protection course with butted joints over waterproofing membrane.
 - 1. Molded-sheet drainage panels may be used in place of a separate protection course to vertical applications when approved by waterproofing manufacturer and installed immediately.

3.4 INSTALLATION OF BLINDSIDE SHEET WATERPROOFING

- A. Install blindside sheet waterproofing according to manufacturer's written instructions.
- B. Place and secure molded-sheet drainage panels over substrate. Lap edges and ends of geotextile to maintain continuity.
- C. Vertical Applications: Install sheet with face against substrate. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required by membrane manufacturer. Overlap and seal seams, and stagger and tape end laps to ensure watertight installation. Mechanically fasten to substrate.
 - 1. Securely fasten top termination of membrane with continuous metal termination bar anchored into substrate and cover with detail tape.
- D. Horizontal Applications: Install sheet with face against substrate. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required by membrane manufacturer. Overlap and seal seams, and stagger and tape end laps to ensure watertight installation.

- E. Corners: Seal lapped terminations and cut edges of sheet waterproofing at inside and outside corners with detail tape.
- F. Seal penetrations through sheet waterproofing to provide watertight seal with detail tape patches or wraps and a liquid-membrane troweling.
- G. Install sheet waterproofing and auxiliary materials to produce a continuous watertight tie into adjacent waterproofing.
- H. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Tape perimeter of damaged or nonconforming area extending 6 inches beyond repaired areas in all directions. Apply a patch of sheet waterproofing and firmly secure with detail tape.

3.5 INSTALLATION OF MOLDED-SHEET DRAINAGE PANELS

- A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.
 - 1. For vertical applications, install protection course before installing drainage panels.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components; and to furnish daily reports to Architect.
- B. Waterproofing will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.7 PROTECTION, REPAIR, AND CLEANING

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.
- D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 07 13 26

SECTION 07 13 53

ELASTOMERIC SHEET WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes EPDM rubber sheet waterproofing at balconies.
- B. Related Requirements:
 - 1. Section 07 13 26 "Self-Adhering Sheet Waterproofing" for waterproofing building foundations.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review waterproofing requirements including surface preparation, substrate condition and pretreatment, minimum curing period, forecasted weather conditions, special details and sheet flashings, installation procedures, testing and inspection procedures, and protection and repairs.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, and tested physical and performance properties of waterproofing.
 - 2. Include manufacturer's written instructions for evaluating, preparing, and treating substrate.
- B. Shop Drawings: Show locations and extent of waterproofing and details of substrate joints and cracks, expansion joints, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.
- C. Samples: For each exposed product and for each color and texture specified.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Field quality-control reports.

- C. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.
- B. Mockups: Build mockups to verify selections made under Sample submittals and to set quality standards for installation.
 - 1. Build for each typical waterproofing installation including accessories to demonstrate surface preparation, crack and joint treatments, inside and outside corner treatments, and protection.
 - a. Size: As indicated on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended in writing by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
 - 1. Do not apply waterproofing in snow, rain, fog, or mist.
- B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.8 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to furnish replacement waterproofing material for waterproofing that does not comply with requirements or that fails to remain watertight within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.
- B. Installer's Special Warranty: Specified form, signed by Installer, covering Work of this Section, for warranty period of two years.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Waterproofing System: Obtain waterproofing materials from single source from single manufacturer.

2.2 SHEET WATERPROOFING

- A. EPDM Rubber Sheet: ASTM D6134, Type I, 60-mil-thick flexible sheet, unreinforced, formed from EPDM.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Carlisle Coatings & Waterproofing Inc.; Sure-Seal EPDM.

2.3 AUXILIARY MATERIALS

- A. Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
 - 1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.
- B. Concealed Sheet Flashing: Same material, construction, and thickness as sheet waterproofing or 60-mil-thick, uncured EPDM, as required by manufacturer.
- C. Exposed Sheet Flashing: 60-mil-thick EPDM, cured or uncured, as required by manufacturer.
- D. Bonding Adhesives: For bonding waterproofing sheets and sheet flashings to substrates and projections.
- E. Splicing Cement and Cleaner: Single-component butyl splicing cement and solvent-based splice cleaner.
- F. Lap Sealant: Single-component sealant.
- G. In-Seam Sealant: Single-component sealant.
- H. Water-Cutoff Mastic: Butyl mastic sealant.
- I. Waterproofing and Sheet-Flashing Accessories: Sealants, pourable sealers, cone and vent flashings, inside and outside corner flashings, termination reglets, and other accessories recommended by waterproofing manufacturer for intended use.
- J. Metal Termination Bars: Manufacturer's standard aluminum bars, approximately 1 inch wide, prepunched, with fasteners.
- K. Protection Course: Semirigid sheets of asphalt-impregnated organic mat, mineral surface, with a nominal thickness of 1/8 inch.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of waterproofing.

1. Verify that concrete has cured and aged for minimum time period recommended in writing by waterproofing manufacturer.
2. Verify that substrate is visibly dry and within the moisture limits recommended in writing by manufacturer. Test for capillary moisture by plastic sheet method according to ASTM D4263.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.
- B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.
- C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.
- D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.
- E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D4258.
- F. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions.

3.3 INSTALLATION OF FULLY ADHERED SHEET

- A. Install fully adhered sheets over entire area to receive waterproofing according to manufacturer's written instructions and per recommendations in ASTM D5843.
- B. Accurately align sheets and maintain uniform side and end laps of minimum dimensions required. Stagger end laps.
- C. Apply bonding adhesive to substrates at required rate and allow it to partially dry.
- D. Apply bonding adhesive to sheets and firmly adhere sheets to substrates. Do not apply bonding adhesive to splice area of sheet.
- E. Repair tears, voids, and lapped seams in waterproofing that do not comply with requirements. Slit and flatten fishmouths and blisters. Patch with sheet waterproofing extending beyond repaired areas in all directions.
- F. Horizontal Application: Apply sheets with side laps shingled with slope of deck where possible.
 1. Spread sealant bed over deck drain flange at deck drains and securely seal sheet waterproofing in place with clamping ring.

3.4 INSTALLATION OF SEAMS

- A. Cement Splice: Clean splice areas, apply splicing cement and in-seam sealant, and firmly roll side and end laps of overlapping sheets according to manufacturer's written instructions to produce a splice not less than 6 inches wide and to ensure a watertight seam installation. Apply lap sealant and seal edges of sheet terminations.

3.5 INSTALLATION OF SHEET FLASHING

- A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to waterproofing manufacturer's written instructions.
- B. Form wall flashings using exposed sheet flashing.
- C. Cover expansion joints and discontinuous deck-to-wall or deck-to-deck joints by extending deck sheet waterproofing over joints.
- D. Terminate and seal top of sheet flashings with mechanically anchored termination bars.

3.6 INSTALLATION OF PROTECTION COURSE

- A. Install protection course over waterproofing membrane according to manufacturer's written instructions and before beginning subsequent construction operations. Minimize exposure of membrane.

3.7 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests.
- B. Manufacturer's Field Service: Engage a site representative qualified by waterproofing membrane manufacturer to inspect substrate conditions, surface preparation, membrane application, flashings, protection, and drainage components; and to furnish daily reports to Architect.
- C. Flood Testing: Flood test each deck area for leaks, according to procedures in ASTM D5957, after completing waterproofing but before placing overlying construction. Install temporary containment assemblies, plug or dam drains, and flood with potable water.
 - 1. Flood to an average depth of 2-1/2 inches with a minimum depth of 1 inch and a maximum depth of 4 inches. Maintain 2 inches of clearance from top of sheet flashings.
 - 2. Flood each area for 24 hours.
 - 3. Testing agency shall observe flood testing and examine underside of decks and terminations for evidence of leaks during flood testing.
 - 4. After flood testing, repair leaks, repeat flood tests, and make further repairs until waterproofing installation is watertight.
- D. Waterproofing will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

3.8 PROTECTION, REPAIR, AND CLEANING

- A. Do not permit foot or vehicular traffic on unprotected membrane.
- B. Protect waterproofing from damage and wear during remainder of construction period.
- C. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.
- D. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended in writing by manufacturer of affected construction.

END OF SECTION 07 13 53

SECTION 07 21 00

THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Extruded polystyrene foam-plastic board insulation.
2. Polyisocyanurate foam-plastic board insulation.
3. Glass-fiber blanket insulation.
4. Loose-fill insulation.
5. Insulation fasteners.
6. Insulation for miscellaneous voids.
7. Eave ventilation troughs.

- B. Related Requirements:

1. Section 07 21 19 "Foamed-in-Place Insulation" for spray-applied polyurethane foam insulation.
2. Section 07 54 23 "Thermoplastic-Polyolefin (TPO) Roofing" for insulation specified as part of roofing construction.
3. Section 09 29 00 "Gypsum Board" for sound attenuation blanket used as acoustic insulation.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:

1. Extruded polystyrene foam-plastic board insulation.
2. Polyisocyanurate foam-plastic board insulation.
3. Glass-fiber blanket insulation.
4. Insert Editor's Note Here
5. Loose-fill insulation.
6. Insulation fasteners.
7. Spray polyurethane foam insulation.
8. Adhesives for bonding insulation.
9. Eave ventilation trough.

1.4 INFORMATIONAL SUBMITTALS

- A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.

1. For blown-in or sprayed fiberglass and cellulosic-fiber loose-fill insulation, indicate initial installed thickness, settled thickness, settled R-value, installed density, coverage area, and number of bags installed.
 2. Sign, date, and post the certification in a conspicuous location on Project site.
- B. Product Certificates: For insulation products indicated to meet GREENGUARD Certification Standards for Low-Emitting Products.
- C. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- D. Research Reports: For foam-plastic insulation, from ICC-ES.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect insulation materials from physical damage and from deterioration due to moisture, soiling, and other sources. Store inside and in a dry location. Comply with manufacturer's written instructions for handling, storing, and protecting during installation.
- B. Protect foam-plastic board insulation as follows:
1. Do not expose to sunlight except to necessary extent for period of installation and concealment.
 2. Protect against ignition at all times. Do not deliver foam-plastic board materials to Project site until just before installation time.
 3. Quickly complete installation and concealment of foam-plastic board insulation in each area of construction.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

- A. HFC-Free Insulation: Provide board insulation complying with requirements of authorities having jurisdiction for HFC-free insulation.
- B. Extruded Polystyrene Board Insulation, Type IV: ASTM C578, Type IV, 25-psi minimum compressive strength; unfaced.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. DiversiFoam Products.
 - b. DuPont de Nemours, Inc.
 - c. Kingspan Insulation Limited.
 - d. Owens Corning.
 2. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 3. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
 4. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.2 POLYISOCYANURATE FOAM-PLASTIC BOARD INSULATION

- A. Polyisocyanurate Board Insulation, Foil Faced: ASTM C1289, foil faced, Type I, Class 1 or 2.
1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; Thermax (ci) Exterior Insulation or a comparable product by one of the following:
 - a. Hunter Panels.
 - b. Rmax, Inc.
 2. Thickness: As indicated on Drawings.
 3. Compressive Strength: 25 psi minimum in accordance with ASTM D1621.
 4. Front Facer: 1.25 mil blue acrylic coated embossed aluminum.
 5. Flexural Strength: 55 psi minimum in accordance with ASTM C203.
 6. Vapor Permeance: 0.04 perms maximum in accordance with ASTM E96.
 7. Water Absorption: 0.01 percent by volume maximum in accordance with ASTM C272.
 8. Thermal Resistance: 6.5 sq. ft. x h x deg F/Btu at 1 inch thickness, minimum in accordance with ASTM C518.
 9. Flame-Spread Index: Not more than 25 for both core and finished product when tested in accordance with ASTM E84.
 10. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
 11. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
 12. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.3 GLASS-FIBER BLANKET INSULATION

- A. Low-Emitting Insulation: Provide glass-fiber blanket insulation that is certified to UL Environment GREENGUARD standards for low chemical emissions.
- B. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. CertainTeed Corporation; Saint-Gobain North America.
 2. Johns Manville; a Berkshire Hathaway company.
 3. Knauf Insulation.
 4. Owens Corning.
- D. Glass-Fiber Blanket Insulation, Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
 2. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
 3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.

2.4 LOOSE-FILL INSULATION

- A. Glass-Fiber Loose-Fill Insulation: ASTM C764, Type I for pneumatic application or Type II for poured application.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Johns Manville; a Berkshire Hathaway company.
 - c. Knauf Insulation.
 2. Flame-Spread Index: Not more than 5 when tested in accordance with ASTM E84.
 3. Smoke-Developed Index: Not more than 5 when tested in accordance with ASTM E84.

2.5 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors: Plate welded to projecting spindle; capable of holding insulation of specified thickness securely in position with self-locking washer in place.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. AGM Industries, Inc.; Series T TACTOO Insul-Hangers.
 - b. Gemco; Spindle Type.
 2. Plate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
 3. Spindle: Copper-coated, low-carbon steel; fully annealed; 0.105 inch in diameter; length to suit depth of insulation.
- B. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick galvanized-steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than 1-1/2 inches square or in diameter.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. AGM Industries, Inc.; RC150 or SC150.
 - b. Gemco; Dome-Cap, R-150, or S-150.
 2. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in the following locations:
 - a. Ceiling plenums.
 - b. Attic spaces.
- C. Anchor Adhesive: Product with demonstrated capability to bond insulation anchors securely to substrates without damaging insulation, fasteners, or substrates.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. AGM Industries, Inc.; TACTOO Adhesive.
 - b. Gemco; Tuff Bond Hanger Adhesive.

2.6 ACCESSORIES

A. Insulation for Miscellaneous Voids:

1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
2. Spray Polyurethane Foam Insulation: Closed cell, with maximum flame-spread and smoke-developed indexes of 25 and 450, respectively, per ASTM E84.
 - a. Products: Subject to compliance with requirements, provide the following:
 - 1) DuPont de Nemours, Inc.; Froth-Pak (Class A).

B. Seam Treatment and Liquid Flashing for Polyisocyanurate Board Insulation:

1. Fluid-applied flashing and sealant.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; LiquidArmor Flashing and Sealant.

C. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

1. Multipurpose construction adhesives shall have a VOC content of 70 g/L or less.

D. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed and sized to fit between roof framing members and to provide ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation or vapor retarders, or that interfere with insulation attachment.

3.2 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Install insulation with manufacturer's R-value label exposed after insulation is installed.
- D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.3 INSTALLATION OF SLAB INSULATION

- A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.
- B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.
 - 1. If not otherwise indicated, extend insulation a minimum of 24 inches in from exterior walls.

3.4 INSTALLATION OF FOUNDATION WALL INSULATION

- A. Butt panels together for tight fit.
- B. Anchor Installation: Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
 - 1. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions.
 - 2. Space anchors according to insulation manufacturer's written instructions for insulation type, thickness, and application.
 - 3. After adhesive has dried, install board insulation by pressing insulation into position over spindles and securing it tightly in place with insulation-retaining washers, taking care not to compress insulation.
 - 4. Where insulation will not be covered by other building materials, apply capped washers to tips of spindles.
- C. Adhesive Installation: Install with adhesive or press into tacky waterproofing or dampproofing according to manufacturer's written instructions.

3.5 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

- A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:
 - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
 - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
 - 3. Maintain 3-inch clearance of insulation around recessed lighting fixtures not rated for or protected from contact with insulation.
 - 4. Attics: Install eave ventilation troughs between roof framing members in insulated attic spaces at vented eaves.
 - 5. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

- B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:
 - 1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.
 - 2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

- C. Loose-Fill Insulation: Apply according to ASTM C1015 and manufacturer's written instructions.
 - 1. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.

3.6 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

- B. Provide temporary coverings or enclosures where insulation is subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.

END OF SECTION 07 21 00

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SECTION 07 21 19

FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Closed-cell spray polyurethane foam insulation.
 - 2. Accessories.
- B. Related Requirements:
 - 1. Section 07 21 00 "Thermal Insulation" for foam-plastic board insulation.

1.2 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

- A. Test and Evaluation Reports:
 - 1. Product Test Reports: For each product, for tests performed by qualified testing agency.
 - 2. Research Reports: For spray-applied polyurethane foam-plastic insulation, from ICC-ES.
- B. Field Quality-Control Submittals:
 - 1. Field quality-control reports.
- C. Qualification Statements: For Installer.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 CLOSED-CELL SPRAY POLYURETHANE FOAM INSULATION

- A. HFC-Free Insulation: Provide spray foam insulation complying with requirements of authorities having jurisdiction for HFC-free insulation.
- B. Closed-Cell Spray Polyurethane Foam: ASTM C1029, Type II, minimum density of 1.5 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.2 deg F x h x sq. ft./Btu at 75 deg F.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle Spray Foam Insulation.
 - b. Henry Company.
 - c. HUNTSMAN BUILDING SOLUTIONS (formerly Demilec, Icynene, Lapolla).
 - d. Johns Manville; a Berkshire Hathaway company.
 - e. Master Builders Solutions.
 - f. NCFI Polyurethanes; a division of Barnhardt Manufacturing Company.
 - g. Volatile Free, Inc.
2. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
3. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.

2.2 ACCESSORIES

- A. Primer: Material recommended by insulation manufacturer where required for adhesion of insulation to substrates.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Verify that substrates are clean, dry, and free of substances that are harmful to insulation.
- B. Priming: Prime substrates where recommended by insulation manufacturer. Apply primer to comply with insulation manufacturer's written instructions. Confine primers to areas to be insulated; do not allow spillage or migration onto adjoining surfaces.

3.2 INSTALLATION

- A. Comply with insulation manufacturer's written instructions applicable to products and applications.
- B. Spray insulation to envelop entire area to be insulated and fill voids.
- C. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer. Do not spray into rising foam.
- D. Framed Construction: Install into cavities formed by framing members to achieve thickness indicated on Drawings.
- E. Miscellaneous Voids: Apply according to manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect spray foam insulation installation, including accessories. Report results in writing.

3.4 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes.

END OF SECTION 07 21 19

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SECTION 07 25 00

WEATHER BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Building wrap.
 - 2. Flexible flashing for use with water-resistive barriers at openings for windows, doors, and other penetrations.
 - 3. Drainage material.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For building wrap, include data on air and water-vapor permeance based on testing according to referenced standards.
- B. Shop Drawings: Show details of building wrap at terminations, openings, and penetrations. Show details of flexible flashing applications.

1.4 INFORMATIONAL SUBMITTALS

- A. Evaluation Reports: For water-resistive barrier and flexible flashing, from ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

- A. Building Wrap: ASTM E1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E84; UV stabilized; and acceptable to authorities having jurisdiction.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont de Nemours, Inc.; DuPont™ Tyvek CommercialWrap or a comparable product by one of the following:
 - a. Dorken Systems Inc.
 - b. Dow Chemical Company (The).
 - c. Kingspan Insulation Limited.

- d. Ludlow Coated Products.
 - e. Raven Industries, Inc.
 - f. TYPAR.
2. Water-Vapor Permeance: Not less than 23 perms per ASTM E96/E96M, Desiccant Method (Procedure A) or not less than 28 perms per ASTM E96/E96M, Water Method (Procedure B).
 3. Allowable UV Exposure Time: Not less than three months.
 4. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.
- B. Building Wrap Fasteners: Fasteners recommended in writing by building wrap manufacturer with 2-inch diameter plastic caps.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. DuPont Safety and Construction; DuPont™ Tyvek® Commercial Wrap Caps.
- C. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

2.2 FLEXIBLE FLASHING

- A. Butyl Rubber Flashing: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a high-density polyethylene film, aluminum foil, or spunbonded polyolefin to produce an overall thickness of not less than 0.030 inch.
1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. DuPont de Nemours, Inc.; DuPont FlexWrap ad DuPont StraightFlash.
- B. Primer for Flexible Flashing: Product recommended in writing by flexible flashing manufacturer for substrate.
- C. Nails and Staples: Product recommended in writing by flexible flashing manufacturer and complying with ASTM F1667.

2.3 DRAINAGE MATERIAL

- A. Drainage Material: Product shall maintain a continuous open space between water-resistive barrier and exterior cladding to create a drainage plane and shall be used under adhered masonry veneer.
1. Insert Editor's Note Here
 2. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

- A. Cover exposed exterior surface of sheathing with water-resistive barrier securely fastened to framing per manufacturer's written instructions immediately after sheathing is installed.
- B. Cover sheathing with water-resistive barrier as follows:
 - 1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
 - 2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.
- C. Building Wrap: Comply with manufacturer's written instructions and warranty requirements.
 - 1. Seal seams, edges, fasteners, and penetrations with tape.
 - 2. Extend into jambs of openings and seal corners with tape.

3.2 FLEXIBLE FLASHING INSTALLATION

- A. Apply flexible flashing where indicated to comply with manufacturer's written instructions.
 - 1. Prime substrates as recommended by flashing manufacturer.
 - 2. Lap seams and junctures with other materials at least 4 inches except that at flashing flanges of other construction, laps need not exceed flange width.
 - 3. Lap flashing over water-resistive barrier at bottom and sides of openings.
 - 4. Lap water-resistive barrier over flashing at heads of openings.
 - 5. Apply flashing at inside and outside corners prior to application of the weather barrier with minimum 12 inch width 30 mil thickness self-adhered flashing membrane, installed to provide minimum coverage of 6 inches on each side of the corner.
 - 6. After flashing has been applied, roll surfaces with a hard rubber or metal roller to ensure that flashing is completely adhered to substrates.

END OF SECTION 07 25 00

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SECTION 07 31 13

ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Glass-fiber-reinforced asphalt shingles.
 - 2. Underlayment materials.
 - 3. Ridge vents.
 - 4. Metal flashing and trim.

1.3 DEFINITIONS

- A. Roofing Terminology: See ASTM D1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" for definitions of terms related to roofing work in this Section.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Asphalt shingles.
 - 2. Underlayment materials.
 - 3. Ridge vents.
 - 4. Asphalt roofing cement.
 - 5. Elastomeric flashing sealant.
- B. Shop Drawings: For metal flashing and trim.
- C. Samples for Initial Selection:
 - 1. For each type of asphalt shingle indicated.
 - 2. For each type of accessory involving color selection.
- D. Samples for Verification: For the following products, in sizes indicated:
 - 1. Asphalt Shingles: Full size.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each type of asphalt shingle and underlayment product indicated, for tests performed by a qualified testing agency.
- C. Research Reports: For high-temperature, self-adhering sheet underlayment, from ICC-ES or other testing and inspecting agency acceptable to authorities having jurisdiction, indicating that product is suitable for intended use under applicable building codes.
- D. Sample Warranty: For manufacturer's materials warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For asphalt shingles to include in maintenance manuals.
- B. Materials warranties.
- C. Roofing Installer's warranty.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Asphalt Shingles: 100 sq. ft. of each type and in each color and blend, in unbroken bundles.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized installer who is trained and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store roofing materials in a dry, well-ventilated location protected from weather, sunlight, and moisture in accordance with manufacturer's written instructions.
- B. Store underlayment rolls on end, on pallets or other raised surfaces. Do not double-stack rolls.
- C. Protect unused roofing materials from weather, sunlight, and moisture when left overnight or when roofing Work is not in progress.
- D. Handle, store, and place roofing materials in a manner to prevent damage to roof deck or structural supporting members.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with installation only when existing and forecasted weather conditions permit product installation and related Work to be performed in accordance with manufacturer's written instructions and warranty requirements.
1. Install self-adhering, polymer-modified bitumen sheet underlayment within the range of ambient and substrate temperatures recommended in writing by manufacturer.

1.12 WARRANTY

- A. Materials Warranty: Manufacturer agrees to repair or replace asphalt shingles that fail within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Manufacturing defects.
 2. Materials Warranty Period: 50 years from date of Substantial Completion, prorated, with first 10 years nonprorated.
 3. Wind-Speed Warranty Period: Asphalt shingles will resist blow-off or damage caused by wind speeds of up to 115 mph for 15 years from date of Substantial Completion.
 4. Algae-Resistance Warranty Period: Asphalt shingles will not discolor for 10 years from date of Substantial Completion.
 5. Workmanship Warranty Period: 10 years from date of Substantial Completion.
- B. Roofing Installer's Warranty: Warranty form signed by Installer in which Installer agrees to repair or replace components of asphalt-shingle roofing that fail in materials or workmanship within specified warranty period.
1. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain each type of product from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Exterior Fire-Test Exposure: Provide asphalt shingles and related roofing materials identical to those of assemblies tested for Class A fire resistance in accordance with ASTM E108 or UL 790 by Underwriters Laboratories or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify products with appropriate markings of applicable testing agency.
- B. Wind Resistance: Provide asphalt shingles that comply with requirements of ASTM D3161/D3161M, Class F, and with ASTM D7158/D7158M, Class H.

2.3 GLASS-FIBER-REINFORCED ASPHALT SHINGLES

- A. Three-Tab-Strip Asphalt Shingles: ASTM D3462/D3462M; glass-fiber reinforced, mineral-granule surfaced, and self-sealing; with tabs regularly spaced.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. CertainTeed LLC; Saint-Gobain North America.
 - b. GAF.
 - c. Owens Corning.
 - d. Tamko Building Products, Inc.
 2. Strip Size: Manufacturer's standard.
 3. Algae Resistance: Granules resist algae discoloration.
 4. Color and Blends: As selected by Architect from manufacturer's full range.
- B. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.4 UNDERLAYMENT MATERIALS

- A. Self-Adhering, Polymer-Modified Bitumen Sheet: ASTM D1970/D1970M, minimum 40-mil- thick sheet; glass-fiber-mat-reinforced, polymer-modified asphalt; with slip-resistant top surface and release backing; cold applied.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Carlisle WIP Products; a brand of Carlisle Construction Materials.
 - b. CertainTeed Corporation; Saint-Gobain North America.
 - c. GAF.
 - d. GCP Applied Technologies Inc.
 - e. Henry Company.
 - f. Owens Corning.
 - g. Tamko Building Products, Inc.
- B. Granular-Surfaced Valley Lining: ASTM D3909/D3909M, mineral-granular-surfaced, glass-felt-based, asphalt roll roofing; 36 inches wide.

2.5 RIDGE VENTS

- A. Rigid Ridge Vent: Manufacturer's standard, rigid-section, high-density, UV-stabilized plastic ridge vent for use under ridge shingles.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Cor-A-Vent, Inc.; V600 or a comparable product by one of the following:
 - a. Air Vent, Inc.; a Gibraltar Industries company.
 - b. Benjamin Obdyke Incorporated.
 - c. CertainTeed Corporation; Saint-Gobain North America.
 - d. GAF.
 - e. Owens Corning.
 - f. Tamko Building Products, Inc.

- g. Tapco International Corporation; Mid-America Components.
 - 2. Minimum Net Free Area: 18 sq. in, per lineal foot.
 - 3. Width: 8-1/2 inches.
 - 4. Thickness: 1 inch.
 - 5. Features:
 - a. Nonwoven geotextile filter strips.
 - b. External deflector baffles.

2.6 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D4586/D4586M Type II, asbestos free.
- B. Elastomeric Flashing Sealant: ASTM C920, Type S, Grade NS, one-part, non-sag, elastomeric polymer sealant; of class and use classifications required to seal joints and remain watertight; recommended in writing by manufacturer for installation of flashing systems.
- C. Roofing Nails: ASTM F1667, aluminum, stainless steel, copper, or hot-dip galvanized-steel wire shingle nails, minimum 0.120-inch-diameter, sharp-pointed, with a 3/8- to 7/16-inch-diameter flat head and of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through sheathing less than 3/4 inch thick.
 - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- D. Underlayment Nails: Aluminum, stainless steel, or hot-dip galvanized-steel wire nails with low-profile metal or plastic caps, 1-inch-minimum diameter.

2.7 METAL FLASHING AND TRIM

- A. Comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."
 - 1. Sheet Metal: Stainless steel.
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of the item unless otherwise specified in this Section or indicated on Drawings.
 - 1. Apron Flashings: Fabricate with lower flange a minimum of 5 inches over and 4 inches beyond each side of downslope asphalt shingles and 6 inches up the vertical surface.
 - 2. Step Flashings: Fabricate with a headlap of 2 inches and a minimum extension of 5 inches over the underlying asphalt shingle and up the vertical surface.
 - 3. Cricket and Backer Flashings: Fabricate with concealed flange extending a minimum of 24 inches beneath upslope asphalt shingles and 6 inches beyond each side of chimney and 6 inches above the roof plane.
 - 4. Counterflashings: Fabricate to cover 4 inches of base flashing measured vertically; and in lengths required so that no step exceeds 8 inches and overall length is no more than 10 feet.
 - a. Provide metal reglets or receivers for installation.

5. Drip Edges: Fabricate in lengths not exceeding 10 feet with minimum 2-inch roof-deck flange and 1-1/2-inch fascia flange with 3/8-inch drip at lower edge.
6. Vent-Pipe Flashings: ASTM B749, Type L51121, at least 1/16 inch thick. Provide lead sleeve sized to slip over and turn down into pipe, soldered to skirt at slope of roof, and extending at least 4 inches from pipe onto roof.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
 1. Examine roof sheathing to verify that sheathing joints are supported by framing and blocking or metal clips and that installation is within flatness tolerances.
 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and completely anchored and that provisions have been made for flashings and penetrations through asphalt shingles.
 3. Verify that vent stacks and other penetrations through roofing are installed and securely fastened.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT MATERIALS

- A. Comply with asphalt shingle and underlayment manufacturers' written installation instructions and with recommendations in NRCA's "The NRCA Roofing Manual: Steep-Slope Roof Systems" applicable to products and applications indicated unless more stringent requirements are specified in this Section or indicated on Drawings.
- B. Self-Adhering, Polymer-Modified Bitumen Sheet: Install, wrinkle free, on roof deck.
 1. Comply with low-temperature installation restrictions of underlayment manufacturer.
 2. Install lapped in direction that sheds water.
 - a. Lap sides not less than 4 inches.
 - b. Lap ends not less than 6 inches, staggered 24 inches between succeeding courses.
 - c. Roll laps with roller.
 3. Prime concrete, masonry, and metal surfaces to receive self-adhering sheet.
 4. Cover underlayment within seven days.
- C. Granular-Surfaced, Concealed Valley Lining: For closed-cut valleys. Comply with recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
 1. Lap roof-deck underlayment over valley lining at least 6 inches.
 2. Install a 36-inch-wide strip of granular-surfaced valley lining, with granular-surface face up, centered in valley and fastened to roof deck.

3. Lap ends of strips at least 12 inches in direction to shed water, and seal with asphalt roofing cement.
4. Fasten to roof deck.

3.3 INSTALLATION OF METAL FLASHING AND TRIM

- A. Install metal flashings and trim to comply with requirements in Section 07 62 00 "Sheet Metal Flashing and Trim."
 1. Install metal flashings in accordance with recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
 2. Bed flanges of metal flashings using asphalt roofing cement or elastomeric flashing sealant.
- B. Apron Flashings: Extend lower flange over and beyond each side of downslope asphalt shingles and up the vertical surface.
- C. Step Flashings: Install with a headlap of 2 inches and extend over underlying shingle and up the vertical face.
 1. Install with lower edge of flashing just upslope of, and concealed by, butt of overlying shingle.
 2. Fasten to roof deck only.
- D. Cricket and Backer Flashings: Install against roof-penetrating elements extending concealed flange beneath upslope asphalt shingles and beyond each side.
- E. Counterflashings: Coordinate with installation of base flashing and fit tightly to base flashing. Lap joints a minimum of 4 inches secured in a waterproof manner.
 1. Install in reglets or receivers.
- F. Rake Drip Edges: Install over underlayment materials and fasten to roof deck.
- G. Eave Drip Edges: Install below underlayment materials and fasten to roof deck.
- H. Pipe Flashings: Form flashing around pipe penetrations and asphalt shingles. Fasten and seal to asphalt shingles as recommended by manufacturer.

3.4 INSTALLATION OF ASPHALT SHINGLES

- A. Install asphalt shingles in accordance with manufacturer's written instructions and recommendations in NRCA's "NRCA Guidelines for Asphalt Shingle Roof Systems."
- B. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip at least 7 inches wide with self-sealing strip face up at roof edge.
 1. Extend asphalt shingles 3/4 inch over fasciae at eaves and rakes.
 2. Install starter strip along rake edge.
- C. Install first and remaining courses of laminated asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

- D. Fasten asphalt shingle strips with a minimum of five roofing nails, but not less than the number indicated in manufacturer's written instructions for roof slope and design wind speed indicated on Drawings and for warranty requirements specified in this Section.
1. Locate fasteners in accordance with manufacturer's written instructions.
 2. Where roof slope exceeds 18:12, hand seal self-sealing asphalt shingles to improve the shingles' positive bond by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
 3. Where roof slope is less than 4:12, hand seal self-sealing asphalt shingles to improve the shingles' positive bond by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
 4. When ambient temperature during installation is below 50 deg F, hand seal self-sealing asphalt shingles by applying asphalt roofing cement spots between course overlaps after nailing the upper course.
- E. Closed-Cut Valleys: Extend asphalt shingle strips from one side of valley 12 inches beyond center of valley.
1. Use one-piece shingle strips without joints in valley.
 2. Fasten with extra nail in upper end of shingle. Install asphalt shingle courses from other side of valley and cut back to a straight line 2 inches short of valley centerline.
 3. Trim upper concealed corners of cut-back shingle strips.
 4. Do not nail asphalt shingles within 6 inches of valley center.
 5. Set trimmed, concealed-corner asphalt shingles in a 3-inch-wide bed of asphalt roofing cement.
- F. Ridge Vents: Install continuous ridge vents over asphalt shingles in accordance with manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- G. Hip and Ridge Shingles: Maintain same exposure of cap shingles as roofing-shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds.
1. Fasten with roofing nails of sufficient length to penetrate sheathing.
 2. Fasten ridge cap asphalt shingles to cover ridge vent without obstructing airflow.

END OF SECTION 07 31 13

SECTION 07 41 13.16

STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes standing-seam metal roof panels.
- B. Related Requirements:
 - 1. Section 07 72 53 "Snow Guards" for prefabricated devices designed to hold snow on the roof surface, allowing it to melt and drain off slowly.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review structural loading limitations of deck during and after roofing.
 - 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 8. Review temporary protection requirements for metal panel systems during and after installation.
 - 9. Review procedures for repair of metal panels damaged after installation.
 - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
 - B. Shop Drawings:
 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
 - C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
 1. Include similar Samples of trim and accessories involving color selection.
 - D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 1. Metal Panels: 12 inches long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories.
- 1.5 INFORMATIONAL SUBMITTALS
- A. Qualification Data: For Installer.
 - B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
 - C. Field quality-control reports.
 - D. Sample Warranties: For special warranties.
- 1.6 CLOSEOUT SUBMITTALS
- A. Maintenance Data: For metal panels to include in maintenance manuals.
- 1.7 QUALITY ASSURANCE
- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.
 - C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 1. Build mockup of typical roof area and eave, including fascia, and soffit as shown on Drawings; approximately 12 feet square by full thickness, including attachments, underlayment, and accessories.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
 2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E1592:
 1. Wind Loads: As indicated on Drawings.
 2. Other Design Loads: As indicated on Drawings.
 3. Deflection Limits: For wind loads, no greater than 1/180 of the span.
- C. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
 1. Uplift Rating: UL 90.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

- A. Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
 1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E1514.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and a flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Drexel Metals; DMC 100SS 1-Inch Mechanically Seamed Metal Roof System or a comparable product by one of the following:

- a. ATAS International, Inc.
 - b. CENTRIA.
 - c. Englert, Inc.
 - d. Fabral.
 - e. Merchant and Evans.
 - f. PAC-CLAD; Petersen Aluminum Corporation; a Carlisle company.
2. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A653/A653M, G90 coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 coating designation; structural quality. Prepainted by the coil-coating process to comply with ASTM A755/A755M.
- a. Nominal Thickness: 0.028 inch.
 - b. Exterior Finish: Two-coat fluoropolymer.
 - c. Color: As selected by Architect from manufacturer's full range.
3. Clips: One-piece fixed to accommodate thermal movement.
- a. Material: 0.028-inch-nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
4. Joint Type: As standard with manufacturer.
5. Panel Coverage: 16.7 inches.
6. Panel Height: 1 inch.

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle WIP Products; a brand of Carlisle Construction Materials; WIP 300HT or a comparable product by one of the following:
 - a. GCP Applied Technologies Inc.
 - b. Henry Company.
 - c. Metal-Fab Manufacturing, a Drexel Metals Company.
 - d. Owens Corning.
 2. Thermal Stability: Stable after testing at 240 deg F; ASTM D1970.
 3. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D1970.
- B. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 coating designation or ASTM A792/A792M, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.
- F. Backer Rod: As specified in Section 07 92 00 "Joint Sealants."

2.5 FABRICATION

- A. Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.6 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF UNDERLAYMENT

- A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.
 - 1. Apply over the entire roof surface.
- B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.
- C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 07 62 00 "Sheet Metal Flashing and Trim."

3.4 INSTALLATION OF STANDING SEAM METAL ROOF PANELS

- A. Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Install continuous backer rod on top of underlayment at midpoint of each panel for full length of panel. Thickness of backer rod to be dimension between top of underlayment and bottom of panel when panels are supported on clips.
 - 3. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 4. Install screw fasteners in predrilled holes.
 - 5. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 6. Install flashing and trim as metal panel work proceeds.
 - 7. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 8. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 - 9. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:

1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
 - C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
 - D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
 - E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
 1. Install clips to supports with self-tapping fasteners.
 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
 3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
 - F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal roof panel manufacturers; or, if not indicated, types recommended by metal roof panel manufacturer.
 - G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
 1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
 - H. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.
- 3.5 ERECTION TOLERANCES
- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.6 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.7 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13.16

SECTION 07 46 46

FIBER-CEMENT SIDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fiber-cement siding and trim.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for wood furring, grounds, nailers, and blocking.
 - 2. Section 06 20 13 "Exterior Finish Carpentry" for exterior cellular PVC and foam-plastic trim.
 - 3. Section 07 25 00 "Weather Barriers" for weather-resistive barriers.

1.3 COORDINATION

- A. Coordinate siding installation with flashings and other adjoining construction to ensure proper sequencing.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Samples for Initial Selection: For fiber-cement siding and trim including related accessories.
- C. Samples for Verification: For each type, color, texture, and pattern required.

1.6 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of fiber-cement product specified.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for fiber-cement siding.
- C. Research/Evaluation Reports: For each type of fiber-cement siding required, from ICC-ES.

- D. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of product, including related accessories, to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

- 1. Furnish full lengths of each type of fiber-cement siding and trim including related accessories, in a quantity equal to 2 percent of amount installed.

1.9 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for fabrication and installation.

- 1. Build mockup of typical wall area as shown on Drawings.
- 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with labels intact until time of use.
- B. Store materials on elevated platforms, under cover, and in a dry location.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace products that fail in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracking and deforming.
 - b. Deterioration of materials beyond normal weathering.
- 2. Warranty Period: 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain products, including related accessories, from single source from single manufacturer.

2.2 FIBER-CEMENT LAP SIDING

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. James Hardie Building Products, Inc.; HardiePlank Lap Siding.
- B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- C. Nominal Thickness: Not less than 5/16 inch.
- D. Horizontal Pattern: Boards 7-1/4 to 7-1/2 inches wide in plain style.
 - 1. Texture: Smooth.
- E. Colors: As selected by Architect from manufacturer's full range.

2.3 FIBER-CEMENT SHINGLE SIDING

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. James Hardie Building Products, Inc.; HardieShingle Siding.
- B. Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- C. Nominal Thickness: Not less than 1/4 inch
- D. Shingle Pattern: 48-inch-wide, straight-edge notched sheets with wood-grain texture.
- E. Colors: As selected by Architect from manufacturer's full range.

2.4 FIBER-CEMENT TRIM BOARDS

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. James Hardie Building Products, Inc.; HardieTrim Boards.
- B. Nominal Thickness: Not less than thicknesses indicated on Drawings.
- C. Texture: Smooth.

- D. Colors: As selected by Architect from manufacturer's full range.

2.5 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
 - 1. Provide accessories matching color and texture of adjacent siding unless otherwise indicated.
- B. Flashing: Provide stainless-steel flashing complying with Section 07 62 00 "Sheet Metal Flashing and Trim" at window and door heads and where indicated.
- C. Fasteners:
 - 1. For fastening to wood, use siding nails of sufficient length to penetrate a minimum of 1 inch into substrate.
 - 2. For fastening fiber cement, use hot-dip galvanized fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of fiber-cement siding and trim and related accessories.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.3 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
 - 1. Do not install damaged components.
 - 2. Install fasteners no more than 24 inches o.c.
- B. Install joint sealants as specified in Section 07 92 00 "Joint Sealants" and to produce a weathertight installation.

3.4 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 07 46 46

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SECTION 07 54 23

THERMOPLASTIC-POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Adhered thermoplastic polyolefin (TPO) roofing system.
2. Roof insulation.
3. Cover board.
4. Walkways.

- B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 21 00 "Thermal Insulation" for insulation beneath the roof deck.
3. Section 07 62 00 "Sheet Metal Flashing and Trim" for metal roof flashings and counterflashings.
4. Section 07 71 29 "Manufactured Roof Expansion Joints" for manufactured roof expansion-joint assemblies.
5. Section 07 92 00 "Joint Sealants" for joint sealants, joint fillers, and joint preparation.
6. Division 22 sections for roof drains.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D1079 and glossary in NRCA's "The NRCA Roofing Manual: Membrane Roof Systems" apply to Work of this Section.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Roofing Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, air barrier Installer, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.

5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. For insulation and roof system component fasteners, include copy of SPRI's Directory of Roof Assemblies listing.
- B. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:
 1. Layout and thickness of insulation.
 2. Base flashings and membrane termination details.
 3. Flashing details at penetrations.
 4. Tapered insulation layout, thickness, and slopes.
 5. Roof plan showing orientation of steel roof deck and orientation of roof membrane, fastening spacings, and patterns for mechanically fastened roofing system.
 6. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
 7. Tie-in with adjoining air barrier.
- C. Samples for Verification: For the following products:
 1. Roof membrane and flashings, of color required.
 2. Walkway pads or rolls, of color required.
- D. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and Installer.
- B. Manufacturer Certificates:
 1. Performance Requirement Certificate: Signed by roof membrane manufacturer, certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of compliance with performance requirements.
 2. Special Warranty Certificate: Signed by roof membrane manufacturer, certifying that all materials supplied under this Section are acceptable for special warranty.
- C. Product Test Reports: For roof membrane and insulation, for tests performed by a qualified testing agency, indicating compliance with specified requirements.

- D. Evaluation Reports: For components of roofing system, from ICC-ES.
- E. Field Test Reports:
 - 1. Concrete internal relative humidity test reports.
 - 2. Fastener-pullout test results and manufacturer's revised requirements for fastener patterns.
- F. Field quality-control reports.
- G. Sample Warranties: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed or listed in SPRI's Directory of Roof Assemblies for roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.
- B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
 - 1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
- C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.
- E. Insulation and weather-sensitive materials stocked on the roof shall be elevated or stored on pallets and covered with tarps.

1.10 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
 - 1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, vapor retarder, substrate board, and other components of roofing system.
 - 2. Warranty Period: 20 years from date of Substantial Completion with no dollar limit (NDL).

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing system and flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roof system and flashings shall remain watertight.
 - 1. Accelerated Weathering: Roof membrane shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
 - 2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D3746, ASTM D4272, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.
- B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.
- C. Wind Uplift Resistance: Design roofing system to resist wind uplift pressures indicated on Drawings when tested according to FM Approvals 4474, UL 580, or UL 1897.
- D. SPRI's Directory of Roof Assemblies Listing: Roof membrane, base flashings, and component materials shall comply with requirements in FM Approvals 4450 or FM Approvals 4470 as part of a roofing system, and shall be listed in SPRI's Directory of Roof Assemblies for roof assembly identical for that specified for this Project.
 - 1. Wind Uplift Load Capacity: 120 psf.
- E. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- F. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.2 THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

- A. TPO Sheet: ASTM D6878/D6878M, internally fabric- or scrim-reinforced, TPO sheet.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Firestone Building Products; UltraPly TPO membrane roofing system or a comparable product by one of the following:
 - a. Carlisle SynTec Incorporated.
 - b. GAF.
 - c. GenFlex Roofing Systems.
 - d. Johns Manville; a Berkshire Hathaway company.
 - 2. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.
 - 3. Thickness: 60 mils, nominal.
 - 4. Exposed Face Color: As selected by Architect from manufacturer's full range of tan and gray colors.

2.3 AUXILIARY ROOFING MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with other roofing components.
 - 1. Adhesive and Sealants: Comply with VOC limits of authorities having jurisdiction.
- B. Sheet Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 55 mils thick, minimum, of same color as TPO sheet.
- C. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.
- D. Bonding Adhesive: Manufacturer's standard.
- E. Metal Termination Bars: Manufacturer's standard, predrilled stainless steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
- F. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing components to substrate, and acceptable to roofing system manufacturer.
- G. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.4 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by TPO roof membrane manufacturer, approved for use in SPRI's Directory of Roof Assemblies listed roof assemblies.
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 2, Grade 2, felt or glass-fiber mat facer on both major surfaces.
 - 1. Compressive Strength: 20 psi.

2. Size: 48 by 48 inches.
3. Thickness: Provide thickness to meet R-value of roofing system indicated on Drawings.

C. Tapered Insulation: Provide factory-tapered insulation boards.

1. Material: Match roof insulation.
2. Minimum Thickness: 1/4 inch.
3. Slope:
 - a. Roof Field: 1/4 inch per foot unless otherwise indicated on Drawings.
 - b. Saddles and Crickets: 1/2 inch per foot unless otherwise indicated on Drawings.

2.5 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.

B. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Full-spread, spray-applied, low-rise, two-component urethane adhesive.

C. Cover Board: Provide one of the following:

1. ASTM C1177/C1177M, glass-mat, water-resistant gypsum board or ASTM C1278/C1278M fiber-reinforced gypsum board.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Georgia-Pacific Gypsum LLC; Dens Deck Prime or a comparable product by one of the following:
 - 1) National Gypsum Company.
 - 2) USG Corporation.
 - b. Thickness: 1/2 inch.
 - c. Surface Finish: Factory primed.
2. ASTM C1289 Type II, Class 4, Grade 1, 1/2-inch-thick polyisocyanurate, with a minimum compressive strength of 80 psi.

2.6 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads or rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.

1. Size: Approximately 36 by 60 inches.
2. Color: Contrasting with roof membrane.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
 - 2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 05 31 00 "Steel Decking."
 - 4. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.
 - 5. Verify that concrete substrate is visibly dry and free of moisture, and that minimum concrete internal relative humidity is not more than 75 percent, or as recommended by roofing system manufacturer, when tested according to ASTM F2170.
 - a. Test Frequency: One test probe per each 1000 sq. ft., or portion thereof, of roof deck, with not less than three tests probes.
 - b. Submit test reports within 24 hours after performing tests.
 - 6. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing system installation according to roofing system manufacturer's written instructions. Remove sharp projections.
- B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
- C. Perform fastener-pullout tests according to roof system manufacturer's written instructions.
 - 1. Submit test result within 24 hours after performing tests.
 - a. Include manufacturer's requirements for any revision to previously submitted fastener patterns required to achieve specified wind uplift requirements.

3.3 INSTALLATION OF ROOFING, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, SPRI's Directory of Roof Assemblies listed roof assembly requirements, and FM Global Property Loss Prevention Data Sheet 1-29.

- B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at end of workday or when rain is forecast. Remove and discard temporary seals before beginning Work on adjoining roofing.
- C. Roof Installer to provide warrantable status notification signage at all points of roof access.

3.4 INSTALLATION OF INSULATION

- A. Coordinate installing roofing system components so insulation is not exposed to precipitation or left exposed at end of workday.
- B. Comply with roofing system and roof insulation manufacturer's written instructions for installing roof insulation.
- C. Installation Over Concrete Decks:
 - 1. Install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.
 - a. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - b. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - c. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
 - 1) Trim insulation so that water flow is unrestricted.
 - d. Fill gaps exceeding 1/4 inch with insulation.
 - e. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - f. Adhere base layer of insulation to vapor retarder according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.
 - 2. Install upper layers of insulation and tapered insulation with joints of each layer offset not less than 12 inches from previous layer of insulation.
 - a. Staggered end joints within each layer not less than 24 inches in adjacent rows.
 - b. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - c. Make joints between adjacent insulation boards not more than 1/4 inch in width.
 - d. At internal roof drains, slope insulation to create a square drain sump with each side equal to the diameter of the drain bowl plus 24 inches.
 - 1) Trim insulation so that water flow is unrestricted.
 - e. Fill gaps exceeding 1/4 inch with insulation.
 - f. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
 - g. Adhere each layer of insulation to substrate using adhesive according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:

- 1) Set each layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.5 INSTALLATION OF COVER BOARDS

- A. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction.
 1. Trim cover board neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 2. At internal roof drains, conform to slope of drain sump.
 - a. Trim cover board so that water flow is unrestricted.
 3. Cut and fit cover board tight to nailers, projections, and penetrations.
 4. Adhere cover board to substrate using adhesive according to SPRI's Directory of Roof Assemblies listed roof assembly requirements for specified Wind Uplift Load Capacity and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - a. Set cover board in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

3.6 INSTALLATION OF ADHERED ROOF MEMBRANE

- A. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- B. Unroll roof membrane and allow to relax before installing.
- C. Start installation of roofing in presence of roofing system manufacturer's technical personnel and Owner's testing and inspection agency.
- D. Accurately align roof membrane, and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- E. Bonding Adhesive: Apply to substrate and underside of roof membrane at rate required by manufacturer, and allow to partially dry before installing roof membrane. Do not apply to splice area of roof membrane.
- F. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeter of roofing.
- G. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- H. Seams: Clean seam areas, overlap roof membrane, and hot-air weld side and end laps of roof membrane and sheet flashings, to ensure a watertight seam installation.
 1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roof membrane and sheet flashings.
 2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
 3. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.

- I. Where rooftop equipment is to be installed on top of roofing system membrane, adhere an extra sheet of roofing membrane, walkway products, or other material as recommended by roofing manufacturer.
- J. Spread sealant bed over deck-drain flange at roof drains, and securely seal roof membrane in place with clamping ring.

3.7 INSTALLATION OF BASE FLASHING

- A. Install sheet flashings and preformed flashing accessories, and adhere to substrates according to roofing system manufacturer's written instructions.
- B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate, and allow to partially dry. Do not apply to seam area of flashing.
- C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.
- D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 INSTALLATION OF WALKWAYS

- A. Flexible Walkways:
 - 1. Install flexible walkways at the following locations:
 - a. Perimeter of each rooftop unit.
 - b. Between each rooftop unit location, creating a continuous path connecting rooftop unit locations.
 - c. Between each roof hatch and each rooftop unit location or path connecting rooftop unit locations.
 - d. Top and bottom of each roof access ladder.
 - e. Between each roof access ladder and each rooftop unit location or path connecting rooftop unit locations.
 - f. Locations indicated on Drawings.
 - g. As required by roof membrane manufacturer's warranty requirements.
 - 2. Provide 6-inch clearance between adjoining pads.
 - 3. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and to inspect substrate conditions, surface preparation, roof membrane application, sheet flashings, protection, and drainage components, and to furnish reports to Architect.
- B. Owner will engage a qualified testing agency to perform the following tests:

1. Low-Voltage Electrical Conductance Testing: Testing agency shall survey entire roof area and flashings to locate discontinuity in the roof membrane using an exposed metal electrical loop to create an electrical field tested with handheld probes.
 - a. Perform tests before overlying construction is placed.
 - b. After testing, repair areas of discontinuities, repeat tests, and make further repairs until roofing and flashing installations are contiguous.
 - 1) Cost of retesting is Contractor's responsibility.
 - c. Testing agency shall prepare survey report indicating locations of initial discontinuities, if any.
 - C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion, in presence of Architect, and to prepare inspection report.
 1. Notify Owner and Architect at least 48 hours in advance of date and time of inspection.
 - D. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
 - E. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.
- 3.10 PROTECTING AND CLEANING
- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction does not affect or endanger roofing system, inspect roofing system for deterioration and damage, describing its nature and extent in a written report, with copies to Architect and Owner.
 - B. Correct deficiencies in or remove roofing system that does not comply with requirements, repair substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
 - C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 54 23

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SECTION 07 62 00

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Manufactured reglets with counterflashing.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed wall sheet metal fabrications.
5. Formed equipment support flashing.

- B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood nailers, curbs, and blocking.
2. Section 07 31 13 "Asphalt Shingles" for materials and installation of sheet metal flashing and trim integral with roofing.
3. Section 07 72 00 "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, and other manufactured roof accessory units.
4. Section 07 95 13.13 "Interior Expansion Joint Cover Assemblies" for manufactured expansion-joint cover assemblies for interior floors, walls, and ceilings.
5. Section 07 95 13.16 "Exterior Expansion Joint Cover Assemblies" for manufactured expansion-joint cover assemblies for exterior building walls, soffits, and parapets.

1.3 COORDINATION

- A. Coordinate sheet metal flashing and trim layout and seams with sizes and locations of penetrations to be flashed, and joints and seams in adjacent materials.
- B. Coordinate sheet metal flashing and trim installation with adjoining roofing and wall materials, joints, and seams to provide leakproof, secure, and noncorrosive installation.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Review construction schedule. Verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review special roof details, roof drainage, roof-penetration flashing, equipment curbs, and condition of other construction that affect sheet metal flashing and trim.
3. Review requirements for insurance and certificates if applicable.

4. Review sheet metal flashing observation and repair procedures after flashing installation.

1.5 ACTION SUBMITTALS

A. Product Data: For each of the following

1. Underlayment materials.
2. Elastomeric sealant.
3. Butyl sealant.
4. Epoxy seam sealer.

B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.
12. Detail formed flashing and trim at scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of sheet metal and accessory indicated with factory-applied finishes.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For fabricator.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sheet metal flashing and trim, and its accessories, to include in maintenance manuals.

B. Special warranty.

1.8 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.
 - 1. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
 - 2. Protect stored sheet metal flashing and trim from contact with water.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to extent necessary for period of sheet metal flashing and trim installation.

1.10 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing" and SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
 1. Exposed Coil-Coated Finish:
 - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 2. Color: As selected by Architect from manufacturer's full range.
 3. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.
 - C. Stainless Steel Sheet: ASTM A240/A240M, Type 304, dead soft, fully annealed; with smooth, flat surface.
 1. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
 2. Finish: ASTM A480/A480M, No. 2D (dull, cold rolled).

2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer in accordance with underlayment manufacturer's written instructions.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle WIP Products; a brand of Carlisle Construction Materials; WIP 300HT or a comparable product by one of the following:
 - a. GCP Applied Technologies Inc.
 - b. Henry Company.
 - c. Metal-Fab Manufacturing, a Drexel Metals Company.
 - d. Owens Corning.
 2. Thermal Stability: ASTM D1970/D1970M; stable after testing at 240 deg F.
 3. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F or lower.
- B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
 - 1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
 - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
 - b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
 - 2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
 - 3. Fasteners for Stainless Steel Sheet: Series 300 stainless steel.
- C. Solder:
 - 1. For Stainless Steel: ASTM B32, Grade Sn60, with acid flux of type recommended by stainless steel sheet manufacturer.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- E. Elastomeric Sealant: ASTM C920, elastomeric polyurethane or silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Bituminous Coating: Cold-applied asphalt emulsion in accordance with ASTM D1187/D1187M.
- H. Asphalt Roofing Cement: ASTM D4586, asbestos free, of consistency required for application.
- I. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Cheney Flashing Company.
 - b. Fry Reglet Corporation.
 - c. Heckmann Building Products, Inc.
 - d. Hohmann & Barnard, Inc.

- e. Keystone Flashing Company, Inc.
 - f. Metal-Era, Inc.
 - g. National Sheet Metal Systems, Inc.
 - h. OMG, Inc.
- 2. Source Limitations: Obtain reglets from single source from single manufacturer.
 - 3. Material: Stainless steel, 0.0188 inch thick.
 - 4. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 - 5. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
 - 6. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
 - 7. Accessories:
 - a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
 - b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

2.5 FABRICATION, GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
 - 1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
 - 2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
 - 3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
 - 4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
 - 5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
- C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.
 - 1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
 - 2. Use lapped expansion joints only where indicated on Drawings.
- D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

- E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.
- F. Fabricate cleats and attachment devices of sizes as recommended by cited sheet metal standard for application, but not less than thickness of metal being secured.
- G. Seams:
 - 1. Fabricate nonmoving seams with flat-lock seams. Form seams and seal with elastomeric sealant unless otherwise recommended by sealant manufacturer for intended use. Rivet joints where necessary for strength.
- H. Do not use graphite pencils to mark metal surfaces.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

- A. Hanging Gutters:
 - 1. Fabricate to cross section required, complete with end pieces, outlet tubes, and other accessories as required.
 - 2. Fabricate in minimum 96-inch-long sections.
 - 3. Furnish flat-stock gutter brackets and flat-stock gutter spacers and straps fabricated from same metal as gutters, of size recommended by cited sheet metal standard, but with thickness not less than twice the gutter thickness.
 - 4. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters. Shop fabricate interior and exterior corners.
 - 5. Expansion Joints: Butt type with cover plate.
 - 6. Gutters with Girth up to 15 Inches: Fabricate from the following materials:
 - a. Aluminum: 0.032 inch thick.
 - 7. Gutters with Girth 16 to 20 Inches: Fabricate from the following materials:
 - a. Aluminum: 0.040 inch thick.
 - 8. Gutters with Girth 21 to 25 Inches: Fabricate from the following materials:
 - a. Aluminum: 0.050 inch thick.
 - 9. Gutters with Girth 26 to 30 Inches: Fabricate from the following materials:
 - a. Aluminum: 0.063 inch thick.
- B. Downspouts: Fabricate downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors. Shop fabricate elbows.
 - 1. Fabricate from the following materials:
 - a. Aluminum: 0.024 inch thick.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof-to-Wall Transition Expansion-Joint Cover: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 - 1. Stainless Steel: 0.0250 inch thick.
- B. Counterflashing: Shop fabricate interior and exterior corners. Fabricate from the following materials:
 - 1. Stainless Steel: 0.0188 inch thick.
- C. Flashing Receivers: Fabricate from the following materials:
 - 1. Stainless Steel: 0.0156 inch thick.
- D. Roof-Penetration Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 0.0188 inch thick.
- E. Roof-Drain Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 0.0156 inch thick.

2.8 WALL SHEET METAL FABRICATIONS

- A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12-foot-long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from the following materials:
 - 1. Stainless Steel: 0.0156 inch thick.
- B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch-high, end dams. Fabricate from the following materials:
 - 1. Stainless Steel: 0.0156 inch thick.

2.9 MISCELLANEOUS SHEET METAL FABRICATIONS

- A. Equipment Support Flashing: Fabricate from the following materials:
 - 1. Stainless Steel: 0.0188 inch thick.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with installer present, for compliance with requirements for installation tolerances, substrate, and other conditions affecting performance of the Work.

1. Verify compliance with requirements for installation tolerances of substrates.
2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
3. Verify that air- or water-resistant barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF UNDERLAYMENT

A. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses.
5. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.

B. Install slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lap joints not less than 4 inches.

3.3 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
6. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
7. Do not field cut sheet metal flashing and trim by torch.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.
 2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
 2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
 3. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
1. Use sealant-filled joints unless otherwise indicated.
 - a. Embed hooked flanges of joint members not less than 1 inch into sealant.
 - b. Form joints to completely conceal sealant.
 - c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
 - d. Adjust setting proportionately for installation at higher ambient temperatures.
 - 1) Do not install sealant-type joints at temperatures below 40 deg F.
 2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.
1. Pre-tin edges of sheets with solder to width of 1-1/2 inches; however, reduce pre-tinning where pre-tinned surface would show in completed Work.
 2. Do not solder aluminum sheet.
 3. Do not use torches for soldering.
 4. Heat surfaces to receive solder, and flow solder into joint.
 - a. Fill joint completely.
 - b. Completely remove flux and spatter from exposed surfaces.
 5. Stainless Steel Soldering:
 - a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
 - b. Promptly remove acid-flux residue from metal after tinning and soldering.
 - c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

3.4 INSTALLATION OF ROOF-DRAINAGE SYSTEM

- A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Hanging Gutters:
1. Join sections with joints sealed with sealant.
 2. Provide for thermal expansion.
 3. Attach gutters at eave or fascia to firmly anchor them in position.
 4. Provide end closures and seal watertight with sealant.
 5. Slope to downspouts.
 6. Fasten gutter spacers to front and back of gutter.
 7. Anchor back of gutter that extends onto roof deck with cleats spaced not more than 24 inches (600 mm) apart.
 8. Anchor gutter with gutter brackets spaced not more than 24 inches (600 mm) apart to roof deck unless otherwise indicated, and loosely lock to front gutter bead.
 9. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet (15.2 m) apart. Install expansion-joint caps.
- C. Downspouts:
1. Join sections with 1-1/2-inch telescoping joints.
 2. Provide hangers with fasteners designed to hold downspouts securely to walls.
 3. Locate hangers at top and bottom and at approximately 60 inches o.c.
 4. Connect downspouts to underground drainage system.

3.5 INSTALLATION OF ROOF FLASHINGS

- A. Install sheet metal flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and cited sheet metal standard.
1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
 2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.
- C. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.
1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
 2. Extend counterflashing 4 inches over base flashing.
 3. Lap counterflashing joints minimum of 4 inches.
 4. Secure in waterproof manner by means of snap-in installation and sealant or lead wedges and sealant unless otherwise indicated.
- D. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric or butyl sealant and clamp flashing to pipes that penetrate roof.

3.6 INSTALLATION OF WALL FLASHINGS

- A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.

3.7 INSTALLATION OF MISCELLANEOUS FLASHING

- A. Equipment Support Flashing:
 - 1. Coordinate installation of equipment support flashing with installation of roofing and equipment.
 - 2. Weld or seal flashing with elastomeric sealant to equipment support member.

3.8 INSTALLATION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.9 CLEANING

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.

3.10 PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. On completion of sheet metal flashing and trim installation, remove unused materials and clean finished surfaces as recommended in writing by sheet metal flashing and trim manufacturer.
- C. Maintain sheet metal flashing and trim in clean condition during construction.
- D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 07 62 00

SECTION 07 71 29

ROOF EXPANSION JOINTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. The work shall consist of furnishing and installing waterproof expansion joints in accordance with the details shown on the plans and the requirements of the specifications. Expansion joints shall be a dual-seal, double-flanged, extruded thermoplastic rubber for sealing expansion joints in roofs through positive integration with the roofing membrane and a purpose-designed system for transitioning between the joint in the roof and joints in walls.

- B. Related Requirements:

- 1. Section 07 95 13.16 "Exterior Expansion Joint Cover Assemblies" for exterior expansion joint seals installed in exterior facade.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for roof expansion joint products.

- B. Shop Drawings: Submit typical expansion joint drawing indicating pertinent dimensions, general construction, expansion joint opening dimensions, tie-in to exterior expansion joint seals, and product information.

- C. Samples: For each exposed product.

1.5 QUALITY ASSURANCE

- A. The General Contractor will conduct a pre-construction meeting with all parties and trades involved in the treatment of work at and around expansion joints including, but not limited to, concrete, mechanical, electrical, HVAC, landscaping, masonry, curtain wall, waterproofing, fire-

stopping, caulking, flooring and other finish trade subcontractors. All superintendents and foremen with responsibility for oversight and setting of the joint gap must attend this meeting. The General Contractor is responsible to coordinate and schedule all trades and ensure that all subcontractors understand their responsibilities in relation to expansion joints and that their work cannot impede anticipated structural movement at the expansion joints, or compromise the achievement of watertightness or life safety at expansion joints in any way.

- B. Manufacturer's Checklist must be completed by expansion joint subcontractor and returned to manufacturer at time of ordering material.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site in Manufacturer's original, intact, labeled containers. Handle and protect as necessary to prevent damage or deterioration during shipment, handling and storage. Store in accordance with manufacturer's installation instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide the following:
 1. Emseal Joint Systems, LTD.; RoofJoint.

2.2 PERFORMANCE REQUIREMENTS

- A. Provide watertight, expansion joint by EMSEAL Joint Systems for expansion joints in roof decks and isolation joints in non-traffic, high-movement and seismic structural joint in roof decks. Typical locations include, but are not limited to the following: applications for joints over occupied space, joints across roof lines, and solid slab construction anywhere waterproofed construction is specified. System shall perform waterproofing and movement-accommodation functions as the result of a single installation and without the addition of gutters, vapor barriers, bladders, or other devices suspended beneath or within the system in any way.
- B. Final selection of the extrusion size to be coordinated between manufacturer, designer, and contractor(s) in consideration of expected movements as a product of structural design and expected temperature variations, taking into account as-built joint-gap sizes and temperatures at expected installation time. Width of joint-gaps at time of casting or cutting to be adjusted, if necessary, from baseline temperature used and specified by designer in determining system suitability.

2.3 MATERIALS

- A. System shall be comprised of the following:
 1. Heat weldable, TPV thermoplastic extrusion with dual-level flange.
 2. Manufacturer supplied termination bar and anchors.
 3. Factory welded downturn transition in the RoofJoint gland that is sealed at a ship lapped 45-degree angle to mate with an interlocking factory-fabricated RoofJoint/SEISMIC COLORSEAL transition piece.

2.4 FABRICATION

- A. Include details and manufacturing drawings indicating profiles of each type of expansion joint cover assembly, splice joints between sections, joinery with other types, special end conditions, fasteners, and relationship to adjoining work and finishes with specific reference to tie-in with deck waterproofing system through integration with expansion joint system dual-level flange.
- B. Directional changes and terminations into vertical plane surfaces (walls, parapets, ends of decks, etc) as well as to transition the material through curbs or other in-slab plane changes to be provided by factory-manufactured assemblies that preserve continuity of seal. Transitions between RoofJoint and any other of Manufacturer's joint systems in the vertical plane to be executed according to Manufacturer's details and to be warranted as watertight.

PART 3 - EXECUTION

3.1 PREPARATION

- A. The contractor shall provide properly formed and prepared expansion joint openings constructed to the exact dimensions and elevations shown on manufacturer's standard system drawings or as shown on the contract drawings. Deviations from these dimensions will not be allowed without the written consent of the engineer of record.
- B. The contractor shall clean the joint opening of all contaminants immediately prior to installation of expansion joint system. Repair spalled, irregular or unsound joint surfaces using accepted industry practices for repair of the substrates in question. Remove protruding roughness to ensure joint sides are smooth. Refer to Manufacturers Installation Guide for detailed step-by-step instructions.
- C. System to be installed by qualified sub-contractors only according to detailed published installation procedures and/or in accordance with job-specific installation instructions of manufacturer's field technician. The applicator must be the same contractor as will be installing the deck waterproofing system. Bids must include for presence of paid-for manufacturer's field technician to be present during initial preparation, inspection, and material installation.

3.2 INSTALLATION

- A. General: Comply with manufacturer's written installation instructions for installation of roof expansion joint products and transitions to exterior expansion joint seals.

3.3 CLEANING AND PROTECTION

- A. Protect the system and its components during construction. Subsequent damage to the expansion joint system will be repaired at the general contractor's expense. After work is complete, clean exposed surfaces with a suitable cleaner that will not harm or attack the finish.

END OF SECTION 07 71 29

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SECTION 07 72 00

ROOF ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Roof curbs.
2. Equipment supports.
3. Roof hatches.
4. Pipe portals.
5. Preformed flashing sleeves.

- B. Related Requirements:

1. Section 05 50 00 "Metal Fabrications" for metal vertical ladders for access to roof hatches.
2. Section 05 52 13 "Pipe and Tube Railings" for safety railing systems not attached to roof-hatch curbs.
3. Section 07 62 00 "Sheet Metal Flashing and Trim" for shop- and field-formed metal flashing, and miscellaneous sheet metal trim and accessories.
4. Section 07 71 00 "Roof Specialties" for manufactured copings, gutters and downspouts.
5. Section 07 71 29 "Roof Expansion Joints" for expansion-joint covers installed with roofing.
6. Section 07 72 53 "Snow Guards" for snow guards.

1.3 COORDINATION

- A. Coordinate layout and installation of roof accessories with roofing membrane and base flashing and interfacing and adjoining construction to provide a leakproof, weathertight, secure, and noncorrosive installation.
- B. Coordinate dimensions with rough-in information or Shop Drawings of equipment to be supported.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of roof accessory.
 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Shop Drawings: For roof accessories.
 - 1. Include plans, elevations, keyed details, and attachments to other work. Indicate dimensions, loadings, and special conditions. Distinguish between plant- and field-assembled work.
- C. Samples: For each exposed product and for each color and texture specified, prepared on Samples of size to adequately show color.
- D. Delegated-Design Submittal: For roof curbs and equipment supports indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Detail mounting, securing, and flashing of roof-mounted items to roof structure. Indicate coordinating requirements with roof membrane system.
 - 2. Wind-Restraint Details: Detail fabrication and attachment of wind restraints. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.

1.5 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Roof plans, drawn to scale, and coordinating penetrations and roof-mounted items. Show the following:
 - 1. Size and location of roof accessories specified in this Section.
 - 2. Method of attaching roof accessories to roof or building structure.
 - 3. Other roof-mounted items including mechanical and electrical equipment, ductwork, piping, and conduit.
 - 4. Required clearances.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For roof accessories to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof accessories shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design roof curbs and equipment supports to comply with wind performance requirements, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Wind-Restraint Performance: As indicated on Drawings.

2.2 ROOF CURBS

- A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Adaptable Air Products.
 - b. AES Industries, Inc.
 - c. Air Balance; a division of MESTEK, Inc.
 - d. Conn-Fab Sales, Inc.
 - e. Curbs Plus, Inc.
 - f. Custom Solution Roof and Metal Products.
 - g. Greenheck Fan Corporation.
 - h. KCC International Inc.
 - i. Kingspan Light + Air, North America.
 - j. Lloyd Industries, Inc.
 - k. LMCurbs.
 - l. Louvers & Dampers, Inc.; a division of Mestek, Inc.
 - m. Metallic Products Corp.
 - n. Pate Company (The).
 - o. Plenums Incorporated.
 - p. Roof Curb Systems.
 - q. Roof Products and Systems (RPS); a division of Hart & Cooley, Inc.
 - r. Roof Products, Inc.
 - s. Sunoptics Skylights and Daylighting Systems; Acuity Brands International, Inc.
 - t. Thybar Corporation.
 - u. Vent Products Co., Inc.
 - B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
 - C. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.
 - D. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch (nominal 18-gage) thick.
 1. Finish: Baked enamel or powder coat.
 2. Color: As selected by Architect from manufacturer's full range.
 - E. Construction:
 1. Curb Profile: Manufacturer's standard compatible with roofing system.
 2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
 3. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
 4. Top Surface: Level top of curb, with roof slope accommodated by sloping deck-mounting flange or by use of leveler frame.

5. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
6. Insulation: Factory insulated with 1-1/2-inch- thick glass-fiber board insulation.
7. Liner: Same material as curb, of manufacturer's standard thickness and finish.
8. Nailer: Factory-installed wood nailer along top flange of curb, continuous around curb perimeter.
9. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb, of size and spacing required to meet wind uplift requirements.
10. Platform Cap: Where portion of roof curb is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
11. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

2.3 EQUIPMENT SUPPORTS

- A. Equipment Supports: Rail-type metal equipment supports capable of supporting superimposed live and dead loads between structural supports, including equipment loads and other construction indicated on Drawings, spanning between structural supports; capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, and integrally formed structure-mounting flange at bottom.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Adaptable Air Products.
 - b. AES Industries, Inc.
 - c. Air Balance; a division of MESTEK, Inc.
 - d. Conn-Fab Sales, Inc.
 - e. Curbs Plus, Inc.
 - f. Custom Solution Roof and Metal Products.
 - g. Greenheck Fan Corporation.
 - h. KCC International Inc.
 - i. Lloyd Industries, Inc.
 - j. LMCurbs.
 - k. Louvers & Dampers, Inc.; a division of Mestek, Inc.
 - l. Pate Company (The).
 - m. Plenums Incorporated.
 - n. Portals Plus; a division of Hart & Cooley, Inc.
 - o. Roof Curb Systems.
 - p. Roof Products and Systems (RPS); a division of Hart & Cooley, Inc.
 - q. Roof Products, Inc.
 - r. Thybar Corporation.
 - s. Vent Products Co., Inc.
 - B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
 - C. Supported Load Capacity: Coordinate load capacity with information on Shop Drawings of equipment to be supported.
 - D. Material: Zinc-coated (galvanized) steel sheet, 0.052 inch (nominal 18-gage) thick.

1. Finish: Baked enamel or powder coat.
2. Color: As selected by Architect from manufacturer's full range.

E. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.
2. Insulation: Factory insulated with 1-1/2-inch-thick glass-fiber board insulation.
3. Liner: Same material as equipment support, of manufacturer's standard thickness and finish.
4. Nailer: Factory-installed continuous wood nailers 3-1/2 inches wide on top flange of equipment supports, continuous around support perimeter.
5. Wind Restraint Straps and Base Flange Attachment: Provide wind restraint straps, welded strap connectors, and base flange attachment to roof structure at perimeter of curb of size and spacing required to meet wind uplift requirements.
6. Platform Cap: Where portion of equipment support is not covered by equipment, provide weathertight platform cap formed from 3/4-inch-thick plywood covered with metal sheet of same type, thickness, and finish as required for curb.
7. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as equipment support.
8. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
9. Fabricate equipment supports to minimum height of 12 inches above roofing surface unless otherwise indicated.
10. Sloping Roofs: Where roof slope exceeds 1:48, fabricate each support with height to accommodate roof slope so that tops of supports are level with each other. Equip supports with water diverters or crickets on sides that obstruct water flow.

2.4 ROOF HATCHES

- A. Roof Hatches: Metal roof-hatch units with lids and insulated double-walled curbs, welded or mechanically fastened and sealed corner joints, continuous lid-to-curb counterflashing and weathertight perimeter gasketing, straight sides, and integrally formed deck-mounting flange at perimeter bottom.
1. Basis-of-Design Product: Subject to compliance with requirements, provide BILCO Company (The); Type GS Roof Hatch or a comparable product by one of the following:
 - a. Babcock-Davis.
 - b. Milcor; a division of Hart & Cooley, Inc.
- B. Type and Size: Single-leaf lid, 30 by 36 inches.
- C. Loads: Minimum 40-lbf/sq. ft. external live load and 20-lbf/sq. ft. internal uplift load.
- D. Hatch Material: Zinc-coated (galvanized) steel sheet.
1. Thickness: Manufacturer's standard thickness for hatch size indicated.
 2. Finish: Baked enamel or powder coat.
 3. Color: As selected by Architect from manufacturer's full range.
- E. Construction:
1. Insulation: 2-inch-thick, polyisocyanurate board.

- a. R-Value: 12.0 according to ASTM C1363.
 2. Nailer: Factory-installed wood nailer continuous around hatch perimeter.
 3. Hatch Lid: Opaque, insulated, and double walled, with manufacturer's standard metal liner of same material and finish as outer metal lid.
 4. Curb Liner: Manufacturer's standard, of same material and finish as metal curb.
 5. On ribbed or fluted metal roofs, form flange at perimeter bottom to conform to roof profile.
 6. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
 7. Sloping Roofs: Where slope or roof deck exceeds 1:48, fabricate curb with perimeter curb height that is tapered to accommodate roof slope so that top surfaces of perimeter curb are level. Equip hatch with water diverter or cricket on side that obstructs water flow.
- F. Hardware: Spring operators, hold-open arm, stainless steel spring latch with turn handles, stainless steel butt- or pintle-type hinge system, and padlock hasps inside and outside.
- G. Safety Railing System: Roof-hatch manufacturer's standard system including rails, clamps, fasteners, safety barrier at railing opening, and accessories required for a complete installation; attached to roof hatch and complying with 29 CFR 1910.23 requirements and authorities having jurisdiction.
1. Height: 42 inches above finished roof deck.
 2. Posts and Rails: Galvanized-steel pipe, 1-1/4 inches in diameter or galvanized-steel tube, 1-5/8 inches in diameter.
 3. Flat Bar: Galvanized steel, 2 inches high by 3/8 inch thick.
 4. Maximum Opening Size: System constructed to prevent passage of a sphere 21 inches in diameter.
 5. Self-Latching Gate: Fabricated of same materials and rail spacing as safety railing system. Provide manufacturer's standard hinges and self-latching mechanism.
 6. Post and Rail Tops and Ends: Weather resistant, closed or plugged with prefabricated end fittings.
 7. Provide weep holes or another means to drain entrapped water in hollow sections of handrail and railing members.
 8. Fabricate joints exposed to weather to be watertight.
 9. Fasteners: Manufacturer's standard, finished to match railing system.
 10. Finish: Manufacturer's standard.
- a. Color: As selected by Architect from manufacturer's full range.
- H. Ladder-Assist Post: Roof-hatch manufacturer's standard device for attachment to roof-access ladder.
1. Operation: Post locks in place on full extension; release mechanism returns post to closed position.
 2. Height: 42 inches above finished roof deck.
 3. Material: Steel tube.
 4. Post: 1-5/8-inch- diameter pipe.
 5. Finish: Manufacturer's standard baked enamel or powder coat.
- a. Color: As selected by Architect from manufacturer's full range.

2.5 PIPE PORTALS

- A. Curb-Mounted Pipe Portal: Insulated roof-curb units with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom; with weathertight curb cover with single or multiple collared openings and pressure-sealed conically shaped EPDM protective rubber caps sized for piping indicated, with stainless steel snaplock swivel clamps.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Portals Plus; a division of Hart & Cooley, Inc.
 - b. Roof Products and Systems (RPS); a division of Hart & Cooley, Inc.
- B. Flashing Pipe Portal: Formed aluminum membrane-mounting flashing flange and sleeve with collared opening and pressure-sealed conically shaped EPDM protective rubber cap sized for piping indicated, with stainless steel snaplock swivel clamps.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Portals Plus; a division of Hart & Cooley, Inc.

2.6 PREFORMED FLASHING SLEEVES

- A. Vent Stack Flashing: Metal flashing sleeve, uninsulated, with integral deck flange.
1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - a. Custom Solution Roof and Metal Products.
 - b. Menzies Metal Products.
 - c. Milcor; a division of Hart & Cooley, Inc.
 - d. Thaler Metal Industries Ltd.
 2. Metal: Aluminum sheet, 0.063 inch thick.
 3. Height: 7 inches.
 4. Diameter: As indicated on Drawings.
 5. Finish: Manufacturer's standard.

2.7 METAL MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation.
1. Baked-Enamel or Powder-Coat Finish: After cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat to a minimum dry film thickness of 2 mils.
- B. Aluminum Sheet: ASTM B209, manufacturer's standard alloy for finish required, with temper to suit forming operations and performance required.

1. Mill Finish: As manufactured.

C. Stainless Steel Sheet and Shapes: ASTM A240/A240M or ASTM A666, Type 304.

D. Steel Shapes: ASTM A36/A36M, hot-dip galvanized according to ASTM A123/A123M unless otherwise indicated.

E. Steel Tube: ASTM A500/A500M, round tube.

F. Galvanized-Steel Tube: ASTM A500/A500M, round tube, hot-dip galvanized according to ASTM A123/A123M.

G. Steel Pipe: ASTM A53/A53M, galvanized.

2.8 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Polyisocyanurate Board Insulation: ASTM C1289, thickness and thermal resistivity as indicated.

C. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

D. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

E. Underlayment:

1. Slip Sheet: Building paper, 3 lb/100 sq. ft. minimum, rosin sized.

2. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.

F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

1. Fasteners for Zinc-Coated or Aluminum-Zinc Alloy-Coated Steel: Series 300 stainless steel or hot-dip zinc-coated steel according to ASTM A153/A153M or ASTM F2329.

2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.

G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

H. Elastomeric Sealant: ASTM C920, elastomeric polyurethane or silicone polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

I. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.

2.9 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.
- B. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.
- C. Verify dimensions of roof openings for roof accessories.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install roof accessories according to manufacturer's written instructions.
 - 1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
 - 3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
 - 4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.
- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.
 - 1. Coat concealed side of uncoated aluminum roof accessories with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
 - 2. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.
- C. Roof Curb Installation: Install each roof curb so top surface is level.
- D. Equipment Support Installation: Install equipment supports so top surfaces are level with each other.
- E. Roof-Hatch Installation:

1. Verify that roof hatch operates properly. Clean, lubricate, and adjust operating mechanism and hardware.
 2. Attach safety railing system to roof-hatch curb.
 3. Attach ladder-assist post according to manufacturer's written instructions.
- F. Preformed Flashing-Sleeve and Flashing Pipe Portal Installation: Secure flashing sleeve to roof membrane according to flashing-sleeve manufacturer's written instructions; flash sleeve flange to surrounding roof membrane according to roof membrane manufacturer's instructions.
- G. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

3.3 REPAIR AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.
- B. Clean exposed surfaces according to manufacturer's written instructions.
- C. Clean off excess sealants.
- D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 07 72 00

SECTION 07 72 53

SNOW GUARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Pad-type, flat-mounted metal snow guards.
 - 2. Pad-type, seam-mounted cast-metal snow guards.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Shop Drawings: Include roof plans showing layouts and attachment details of snow guards.
- C. Samples:
 - 1. Pad-Type Snow Guards: Full-size unit with installation hardware.
 - a. For units with factory-applied finishes, submit manufacturer's standard color selections.
- D. Delegated-Design Submittal: For snow guards, include analysis reports signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Include calculation of number and location of snow guards.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that the engineer is licensed in the jurisdiction in which the Project is located.
- B. Product Test Reports: For each type of snow guard, for tests performed by a qualified testing agency, indicating load at failure of attachment to roof system identical to roof system used on this Project.

1.5 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit adhesive-mounted snow guards to be installed, and adhesive cured, according to adhesive manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design snow guards, including attachment to roofing material and roof deck, as applicable for attachment method, based on the following:
1. Roof snow load.
 2. Snow drifting
 3. Roof slope.
 4. Roof type.
 5. Roof dimensions.
 6. Roofing substrate type and thickness.
 7. Snow guard type.
 8. Snow guard fastening method and strength.
 9. Snow guard spacing.
 10. Coefficient of Friction Between Snow and Roof Surface: 0.
- B. Performance Requirements: Provide snow guards that withstand exposure to weather and resist thermally induced movement without failure, rattling, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- C. Structural Performance: Snow guards shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.
1. Snow Loads: As indicated on Drawings.

2.2 PAD-TYPE SNOW GUARDS

- A. Pad-Type, Flat-Mounted Metal Snow Guards:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alpine SnowGuards, a division of Vermont Slate & Copper Services, Inc.
 - b. Berger Building Products, Inc.
 - c. IceBlox Inc.
 - d. Rocky Mountain Snow Guards, Inc.
 - e. Sieger Snow Guards Inc.
 - f. TRA Snow and Sun, Inc.
 - g. Zaleski Snow-Guard and Roofing Specialties Inc.
 2. Material:

- a. ASTM B209 aluminum sheet, not less than 0.040 inch thick.
 - 1) Finish: Powder coat finish complying with AAMA 2603, with a minimum dry film thickness of 1.5 mils.
 - a) Color: As selected by Architect from manufacturer's full range.
 - b. ASTM A653/A653M, metallic-coated steel sheet with G90 coating, not less than 0.022 inch thick.
 - 1) Finish: Powder coat finish complying with AAMA 2603, with a minimum dry film thickness of 1.5 mils.
 - a) Color: As selected by Architect from manufacturer's full range.
 - c. ASTM A792/A792M, Class AZ50 aluminum-zinc alloy-coated steel sheet, Grade 40, not less than 0.022 inch thick.
 - 1) Finish: High-performance organic two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.
 - a) Color: As selected by Architect from manufacturer's full range.
3. Attachment: Manufacturer's tested system, capable of resisting design loads.
- B. Pad-Type, Seam-Mounted Cast-Metal Snow Guards:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Alpine SnowGuards, a division of Vermont Slate & Copper Services, Inc.
 - b. Berger Building Products, Inc.
 - c. Levi's Building Components.
 - d. Sieger Snow Guards Inc.
 - e. TRA Snow and Sun, Inc.
 2. Material:
 - a. ASTM B26/B26M cast aluminum; factory black epoxy finish.
 3. Attachment: Manufacturer's tested system, capable of resisting design loads.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, snow guard attachment, and other conditions affecting performance of the Work.
 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean and prepare substrates for bonding snow guards.
- B. Prime substrates according to snow guard manufacturer's written instructions.

3.3 INSTALLATION

- A. Install snow guards according to manufacturer's written instructions.
 - 1. Space rows as indicated on Shop Drawings.
- B. Attachment for Asphalt Shingle Roofing:
 - 1. Pad-Type, Flat-Mounted Snow Guards: Mechanically anchored through each factory-prepared hole with fasteners concealed by the shingles.
- C. Attachment for Standing-Seam Metal Roofing:
 - 1. Do not use fasteners that will penetrate metal roofing or fastening methods that void metal roofing finish warranty.
 - 2. Pad-Type, Seam-Mounted Snow Guards:
 - a. Install snow guards in straight rows.
 - b. Secure in place using stainless steel set screws, incorporating round nonpenetrating point.
 - c. Torque set screw according to manufacturer's instructions.

END OF SECTION 07 72 53

SECTION 07 81 00

APPLIED FIRE PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes sprayed fire-resistive materials.
- B. Related Requirements:
 - 1. Section 07 81 23 "Intumescent Fire Protection" for mastic and intumescent fire-resistive coatings.

1.3 DEFINITIONS

- A. SFRM: Sprayed fire-resistive materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review products, design ratings, restrained and unrestrained conditions, densities, thicknesses, bond strengths, and other performance requirements.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Sprayed fire-resistive material.
 - 2. Substrate primers.
 - 3. Bonding agent.
- B. Shop Drawings: Framing plans or schedules, or both, indicating the following:
 - 1. Extent of fire protection for each construction and fire-resistance rating.
 - 2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
 - 3. Minimum sprayed fire-resistive material thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
 - 4. Treatment of sprayed fire-resistive material after application.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Product Certificates: For each type of sprayed fire-resistive material.
- C. Evaluation Reports: For sprayed fire-resistive material, from ICC-ES.
- D. Preconstruction Test Reports: For fire protection.
- E. Field quality-control reports.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by sprayed fire-resistive material manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on fire protection.
 - 1. Provide test specimens and assemblies representative of proposed materials and construction.
- B. Preconstruction Adhesion and Compatibility Testing: Test for compliance with requirements for specified performance and test methods.
 - 1. Bond Strength: Test for cohesive and adhesive strength according to ASTM E736. Provide bond strength indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
 - 2. Density: Test for density according to ASTM E605. Provide density indicated in referenced fire-resistance design, but not less than minimum specified in Part 2.
 - 3. Verify that manufacturer, through its own laboratory testing or field experience, attests that primers or coatings are compatible with sprayed fire-resistive material.
 - 4. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
 - 5. For materials failing tests, obtain sprayed fire-resistive material manufacturer's written instructions for corrective measures including the use of specially formulated bonding agents or primers.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply fire protection when ambient or substrate temperature is 44 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fire protection, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fire protection dries thoroughly.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Assemblies: Provide fire protection, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fire protection for each fire-resistance design from single source.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.
- D. VOC Content: For field applications, verify coatings comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Primers, Sealers, and Undercoaters: 200 g/L.
- E. Asbestos: Provide products containing no detectable asbestos.

2.2 SPRAYED FIRE-RESISTIVE MATERIALS

- A. Sprayed Fire-Resistive Material: Manufacturer's standard, factory-mixed, lightweight, dry formulation, complying with indicated fire-resistance design, and mixed with water at Project site to form a slurry or mortar before conveyance and application or conveyed in a dry state and mixed with atomized water at place of application.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Isolatek International; Cafco Blaze-Shield II or a comparable product by one of the following:
 - a. Carboline Company; a subsidiary of RPM International.
 - b. GCP Applied Technologies Inc.
 - 2. Bond Strength: Minimum 150-lbf/sq. ft. cohesive and adhesive strength based on field testing according to ASTM E736.
 - 3. Density: Not less than density specified in the approved fire-resistance design, according to ASTM E605.
 - 4. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design or ASTM E605, whichever is thicker.
 - 5. Combustion Characteristics: ASTM E136.
 - 6. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 10 or less.
 - b. Smoke-Developed Index: 10 or less.
 - 7. Compressive Strength: Minimum 10 lbf/sq. in. according to ASTM E761.
 - 8. Corrosion Resistance: No evidence of corrosion according to ASTM E937.
 - 9. Deflection: No cracking, spalling, or delamination according to ASTM E759.
 - 10. Air Erosion: Maximum weight loss of 0.025 g/sq. ft. in 24 hours according to ASTM E859.

11. Fungal Resistance: Treat products with manufacturer's standard antimicrobial formulation to result in no growth on specimens per ASTM G21 or rating of 10 according to ASTM D3274 when tested according to ASTM D3273.

2.3 AUXILIARY MATERIALS

- A. Provide auxiliary materials that are compatible with sprayed fire-resistive material and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by sprayed fire-resistive material manufacturer and complying with one or both of the following requirements:
 1. Primer and substrate are identical to those tested in required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
 2. Primer's bond strength in required fire-resistance design complies with specified bond strength for sprayed fire-resistive material and with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction, based on a series of bond tests according to ASTM E736.
- C. Bonding Agent: Product approved by sprayed fire-resistive material manufacturer and complying with requirements in UL's "Fire Resistance Directory" or in the listings of another qualified testing agency acceptable to authorities having jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design.
 1. Verify that substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fire protection with substrates under conditions of normal use or fire exposure.
 2. Verify that objects penetrating fire protection, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
 3. Verify that substrates receiving fire protection are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fire protection application.
- B. Conduct tests according to sprayed fire-resistive material manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fireproofing materials during application. Provide temporary enclosure as required to confine spraying operations, protect the environment, and ensure maintenance of adequate ambient conditions for temperature and ventilation.
- B. Clean substrates of substances that could impair bond of fire protection.
- C. Prime substrates where included in fire-resistance design and where recommended in writing by sprayed fire-resistive material manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fire protection.
- D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fire protection. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.3 APPLICATION

- A. Construct fire protection assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, sealers, topcoats, finishing, and other materials and procedures affecting fire protection Work.
- B. Comply with sprayed fire-resistive material manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fire protection; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
- C. Coordinate application of fire protection with other construction to minimize need to cut or remove fire protection.
 - 1. Do not begin applying fire protection until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
 - 2. Defer installing ducts, piping, and other items that would interfere with applying fire protection until application of fire protection is completed.
- D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and sprayed fire-resistive material manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by sprayed fire-resistive material manufacturer.
- E. Spray apply fire protection to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by sprayed fire-resistive material manufacturer.
- F. Extend fire protection in full thickness over entire area of each substrate to be protected.
- G. Install body of fire protection in a single course unless otherwise recommended in writing by sprayed fire-resistive material manufacturer.
- H. Provide a uniform finish complying with description indicated for each type of fire protection material and matching finish approved for required mockups.

- I. Cure fire protection according to sprayed fire-resistive material manufacturer's written instructions.
- J. Do not install enclosing or concealing construction until after fire protection has been applied, inspected, and tested and corrections have been made to deficient applications.
- K. Finishes: Where indicated, apply fire protection to produce the following finishes:
 - 1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Test and inspect as required by the IBC, Subsection 17 05 .13, "Sprayed Fire-Resistant Materials."
- B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fire protection for the next area until test results for previously completed applications of fire protection show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fire protection will be considered defective if it does not pass tests and inspections.
 - 1. Remove and replace fire protection that does not pass tests and inspections, and retest.
 - 2. Apply additional fire protection, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

3.5 CLEANING

- A. Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

3.6 PROTECTION

- A. Protect fire protection, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fire protection is without damage or deterioration at time of Substantial Completion.

3.7 REPAIRS

- A. As installation of other construction proceeds, inspect fire protection and repair damaged areas and fire protection removed due to work of other trades.
- B. Repair fire protection damaged by other work before concealing it with other construction.
- C. Repair fire protection by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 07 81 00

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SECTION 07 81 23

INTUMESCENT FIRE PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes mastic and intumescent fire-resistive coatings applied to exposed interior structural steel components.
- B. Related Requirements:
 - 1. Section 07 81 00 "Applied Fire Protection" for sprayed fire-resistive materials (SFRM).

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review products, design ratings, restrained and unrestrained conditions, thicknesses, and other performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Mastic and intumescent fire-resistive coatings.
 - 2. Substrate primers.
 - 3. Reinforcing fabric.
 - 4. Reinforcing mesh.
 - 5. Topcoat.
 - 6. For interior coatings, indicate VOC content in g/L.
- B. Shop Drawings: Framing plans or schedules, or both, indicating the following:
 - 1. Extent of fire protection for each construction and fire-resistance rating.
 - 2. Applicable fire-resistance design designations of a qualified testing and inspecting agency acceptable to authorities having jurisdiction.
 - 3. Minimum mastic and intumescent fire-resistive coating thicknesses needed to achieve required fire-resistance rating of each structural component and assembly.
 - 4. Treatment of mastic and intumescent fire-resistive coating after application.
- C. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard dimensions in size.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Product Certificates: For each type of mastic and intumescent fire-resistive coating.
- C. Evaluation Reports: For mastic and intumescent fire-resistive coating, from ICC-ES.
- D. Field quality-control reports.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm or individual certified, licensed, or otherwise qualified by mastic and intumescent fire-resistive coating manufacturer as experienced and with sufficient trained staff to install manufacturer's products according to specified requirements.
- B. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Build mockup of each type of fire protection and different substrate and each required finish as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not apply fire protection when ambient or substrate temperature is 50 deg F or lower unless temporary protection and heat are provided to maintain temperature at or above this level for 24 hours before, during, and for 24 hours after product application.
- B. Ventilation: Ventilate building spaces during and after application of fire protection, providing complete air exchanges according to manufacturer's written instructions. Use natural means or, if they are inadequate, forced-air circulation until fire protection dries thoroughly.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Assemblies: Provide fire protection, including auxiliary materials, according to requirements of each fire-resistance design and manufacturer's written instructions.
- B. Source Limitations: Obtain fire protection from single source.
- C. Fire-Resistance Design: Indicated on Drawings, tested according to ASTM E119 or UL 263; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Steel members are to be considered unrestrained unless specifically noted otherwise.

- D. VOC Content: For interior field applications, verify coatings comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Primers, Sealers, and Undercoaters: 200 g/L.
- E. Asbestos: Provide products containing no detectable asbestos.

2.2 MASTIC AND INTUMESCENT FIRE-RESISTIVE COATINGS

- A. Mastic and Intumescent Fire-Resistive Coating: Manufacturer's standard, factory-mixed formulation or factory-mixed, multicomponent system consisting of intumescent base coat and topcoat, and complying with indicated fire-resistance design.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Isolatek International; Cafco SprayFilm-WB 3 or a comparable product by one of the following:
 - a. Albi Manufacturing; a division of StanChem, Inc.
 - b. Carboline Company; a subsidiary of RPM International.
 - c. Contego International Inc.
 - d. Hilti, Inc.
 - e. International Protective Coatings.
 - f. Sherwin-Williams Company (The).
 - 2. Application: Designated for "interior general purpose" use by a qualified testing agency acceptable to authorities having jurisdiction.
 - 3. Thickness: As required for fire-resistance design indicated, measured according to requirements of fire-resistance design.
 - 4. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 50 or less.
 - 5. Hardness: Not less than 65, Type D durometer, according to ASTM D2240.
 - 6. Finish: As selected by Architect from manufacturer's standard finishes.
 - a. Color and Gloss: As selected by Architect from manufacturer's full range.

2.3 AUXILIARY MATERIALS

- A. Provide auxiliary materials that are compatible with mastic and intumescent fire-resistive coating and substrates and are approved by UL or another testing and inspecting agency acceptable to authorities having jurisdiction for use in fire-resistance designs indicated.
- B. Substrate Primers: Primers approved by mastic and intumescent fire-resistive coating manufacturer and complying with required fire-resistance design by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
- C. Topcoat: Suitable for application over mastic and intumescent fire-resistive coating; of type recommended in writing by mastic and intumescent fire-resistive coating manufacturer for each fire-resistance design.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrates and other conditions affecting performance of the Work and according to each fire-resistance design.
 - 1. Verify that substrates are free of dirt, oil, grease, release agents, rolling compounds, mill scale, loose scale, incompatible primers, paints, and encapsulants, or other foreign substances capable of impairing bond of fire protection with substrates under conditions of normal use or fire exposure.
 - 2. Verify that objects penetrating fire protection, including clips, hangers, support sleeves, and similar items, are securely attached to substrates.
 - 3. Verify that substrates receiving fire protection are not obstructed by ducts, piping, equipment, or other suspended construction that will interfere with fire protection application.
- B. Conduct tests according to mastic and intumescent fire-resistive coating manufacturer's written instructions to verify that substrates are free of substances capable of interfering with bond.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Cover other work subject to damage from fallout or overspray of fire protection materials during application.
- B. Clean substrates of substances that could impair bond of fire protection.
- C. Prime substrates where included in fire-resistance design and where recommended in writing by mastic and intumescent fire-resistive coating manufacturer unless compatible shop primer has been applied and is in satisfactory condition to receive fire protection.
- D. For applications visible on completion of Project, repair substrates to remove surface imperfections that could affect uniformity of texture and thickness in finished surface of fire protection. Remove minor projections and fill voids that would telegraph through fire-resistive products after application.

3.3 APPLICATION

- A. Construct fire protection assemblies that are identical to fire-resistance design indicated and products as specified, tested, and substantiated by test reports; for thickness, primers, topcoats, finishing, and other materials and procedures affecting fire protection Work.
- B. Comply with mastic and intumescent fire-resistive coating manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix, convey, and apply fire protection; as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.

- C. Coordinate application of fire protection with other construction to minimize need to cut or remove fire protection.
 - 1. Do not begin applying fire protection until clips, hangers, supports, sleeves, and other items penetrating fire protection are in place.
 - 2. Defer installing ducts, piping, and other items that would interfere with applying fire protection until application of fire protection is completed.
- D. Install auxiliary materials as required, as detailed, and according to fire-resistance design and mastic and intumescent fire-resistive coating manufacturer's written instructions for conditions of exposure and intended use. For auxiliary materials, use attachment and anchorage devices of type recommended in writing by mastic and intumescent fire-resistive coating manufacturer.
- E. Spray apply fire protection to maximum extent possible. After the spraying operation in each area, complete the coverage by trowel application or other placement method recommended in writing by mastic and intumescent fire-resistive coating manufacturer.
- F. Extend fire protection in full thickness over entire area of each substrate to be protected.
- G. Install body of fire protection in a single course unless otherwise recommended in writing by mastic and intumescent fire-resistive coating manufacturer.
- H. Provide a uniform finish complying with description indicated for each type of fire protection material and matching finish approved for required mockups.
- I. Cure fire protection according to mastic and intumescent fire-resistive coating manufacturer's written instructions.
- J. Do not install enclosing or concealing construction until after fire protection has been applied, inspected, and tested and corrections have been made to deficient applications.
- K. Finishes: Where indicated, apply fire protection to produce the following finishes:
 - 1. Manufacturer's Standard Finishes: Finish according to manufacturer's written instructions for each finish selected.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector to perform the following special inspections:
 - 1. Test and inspect as required by the IBC, Subsection 17 05 .14, "Mastic and Intumescent Fire-Resistant Coatings."
- B. Perform the tests and inspections of completed Work in successive stages. Do not proceed with application of fire protection for the next area until test results for previously completed applications of fire protection show compliance with requirements. Tested values must equal or exceed values as specified and as indicated and required for approved fire-resistance design.
- C. Fire protection will be considered defective if it does not pass tests and inspections.
 - 1. Remove and replace fire protection that does not pass tests and inspections, and retest.
 - 2. Apply additional fire protection, per manufacturer's written instructions, where test results indicate insufficient thickness, and retest.

- D. Prepare test and inspection reports.

3.5 CLEANING

- A. Cleaning: Immediately after completing spraying operations in each containable area of Project, remove material overspray and fallout from surfaces of other construction and clean exposed surfaces to remove evidence of soiling.

3.6 PROTECTION

- A. Protect fire protection, according to advice of manufacturer and Installer, from damage resulting from construction operations or other causes, so fire protection is without damage or deterioration at time of Substantial Completion.

3.7 REPAIRS

- A. As installation of other construction proceeds, inspect fire protection and repair damaged areas and fire protection removed due to work of other trades.
- B. Repair fire protection damaged by other work before concealing it with other construction.
- C. Repair fire protection by reapplying it using same method as original installation or using manufacturer's recommended trowel-applied product.

END OF SECTION 07 81 23

SECTION 07 84 13

PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Penetration firestopping systems for the following applications:

- a. Penetrations in fire-resistance-rated walls.
- b. Penetrations in horizontal assemblies.

- B. Related Requirements:

- 1. Section 07 84 43 "Joint Firestopping" for joints in or between fire-resistance-rated construction.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. For sealants, indicate VOC content in g/L.

- B. Product Schedule: For each penetration firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

- 1. Engineering Judgments: Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a particular penetration firestopping system, submit illustration, with modifications marked, approved by penetration firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly. Obtain approval of authorities having jurisdiction prior to submittal.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

- B. Product Test Reports: For each penetration firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approval according to FM Approval 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install penetration firestopping system when ambient or substrate temperatures are outside limits permitted by penetration firestopping system manufacturers or when substrates are wet because of rain, frost, condensation, or other causes.
- B. Install and cure penetration firestopping materials per manufacturer's written instructions using natural means of ventilations or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

- A. Coordinate construction of openings and penetrating items to ensure that penetration firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate penetration firestopping systems.
- C. Notify Owner's testing agency at least seven days in advance of penetration firestopping installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform penetration firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Penetration Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Penetration firestopping systems shall bear classification marking of a qualified testing agency.
 - 1) UL in its "Fire Resistance Directory."

- 2) Intertek Group in its "Directory of Listed Building Products."
- 3) FM Approval in its "Approval Guide."

2.2 PENETRATION FIRESTOPPING SYSTEMS

- A. Penetration Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated. Penetration firestopping systems shall be compatible with one another, with the substrates forming openings, and with penetrating items if any.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Fire Protection Products.
 - b. A/D Fire Protection Systems Inc.
 - c. Grabber Construction Products.
 - d. Hilti, Inc.
 - e. HoldRite; Reliance Worldwide Company.
 - f. International Fireproof Technology Inc.
 - g. NUCO Inc.
 - h. Passive Fire Protection Partners.
 - i. RectorSeal Firestop; a CSW Industrials Company.
 - j. Roxtec.
 - k. Specified Technologies, Inc.
 - l. STC Sound Control.
 - m. Tremco, Inc.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. F-Rating: Not less than the fire-resistance rating of constructions penetrated.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.
1. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 2. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 3. W-Rating: Provide Class 1 penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
- D. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
1. Verify sealant has a VOC content of 250 g/L or less.
- E. Manufactured Piping Penetration Firestopping System: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479, based on testing at a positive pressure differential of 0.01-inch wg.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
 - a. RectorSeal Firestop; a CSW Industrials Company; Metacaulk Cast-In-Place Device (CID).
 2. F-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated.
 3. T-Rating: At least one hour, but not less than the fire-resistance rating of constructions penetrated except for floor penetrations within the cavity of a wall.
 4. W-Rating: Provide penetration firestopping systems showing no evidence of water leakage when tested according to UL 1479.
 5. Sleeve: Molded-PVC plastic, of length to match slab thickness and with integral nailing flange on one end for installation in cast-in-place concrete slabs.
 6. Stack Fitting: ASTM A48/A48M, gray-iron, hubless-pattern wye branch with neoprene O-ring at base and gray-iron plug in thermal-release harness. Include PVC protective cap for plug.
 7. Special Coating: Corrosion resistant on interior of fittings.
- F. Accessories: Provide components for each penetration firestopping system that are needed to install fill materials and to maintain ratings required. Use only those components specified by penetration firestopping system manufacturer and approved by qualified testing and inspecting agency for conditions indicated.
1. Permanent forming/damming/backing materials.
 2. Substrate primers.
 3. Collars.
 4. Steel sleeves.

2.3 FILL MATERIALS

- A. Cast-in-Place Firestop Devices: Factory-assembled devices for use in cast-in-place concrete floors and consisting of an outer sleeve lined with an intumescent strip, a flange attached to one end of the sleeve for fastening to concrete formwork, and a neoprene gasket.
- B. Latex Sealants: Single-component latex formulations that do not re-emulsify after cure during exposure to moisture.
- C. Firestop Devices: Factory-assembled collars formed from galvanized steel and lined with intumescent material sized to fit specific diameter of penetrant.
- D. Intumescent Composite Sheets: Rigid panels consisting of aluminum-foil-faced intumescent elastomeric sheet bonded to galvanized-steel sheet.
- E. Intumescent Putties: Nonhardening, water-resistant, intumescent putties containing no solvents or inorganic fibers.
- F. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side.
- G. Mortars: Prepackaged dry mixes consisting of a blend of inorganic binders, hydraulic cement, fillers and lightweight aggregate formulated for mixing with water at Project site to form a nonshrinking, homogeneous mortar.

- H. Pillows/Bags: Reusable heat-expanding pillows/bags consisting of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents, and fire-retardant additives. Where exposed, cover openings with steel-reinforcing wire mesh to protect pillows/bags from being easily removed.
- I. Silicone Foams: Multicomponent, silicone-based liquid elastomers that, when mixed, expand and cure in place to produce a flexible, nonshrinking foam.
- J. Silicone Sealants: Single-component, silicone-based, neutral-curing elastomeric sealants.

2.4 MIXING

- A. Penetration Firestopping Materials: For those products requiring mixing before application, comply with penetration firestopping system manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing penetration firestopping systems, clean out openings immediately to comply with manufacturer's written instructions and with the following requirements:
 - 1. Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of penetration firestopping materials.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with penetration firestopping materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install penetration firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications.

- B. Install forming materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings.
 - 1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not forming permanent components of firestopping.
- C. Install fill materials by proven techniques to produce the following results:
 - 1. Fill voids and cavities formed by openings, forming materials, accessories and penetrating items to achieve required fire-resistance ratings.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Wall Identification: Permanently label walls containing penetration firestopping systems with the words "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS," using lettering not less than 3 inches high and with minimum 0.375-inch strokes.
 - 1. Locate in accessible concealed floor, floor-ceiling, or attic space at 15 feet from end of wall and at intervals not exceeding 30 feet.
- B. Penetration Identification: Identify each penetration firestopping system with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of penetration firestopping system edge so labels are visible to anyone seeking to remove penetrating items or firestopping systems. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Penetration Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2174.
- B. Where deficiencies are found or penetration firestopping system is damaged or removed because of testing, repair or replace penetration firestopping system to comply with requirements.
- C. Keep firestopping installations accessible for inspection by authorities having jurisdiction. Proceed with enclosing penetration firestopping with other construction only after inspections are complete, inspection reports are issued, and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as the Work progresses by methods and with cleaning materials that are approved in writing by penetration firestopping system manufacturers and that do not damage materials in which openings occur.
- B. Provide final protection and maintain conditions during and after installation that ensure that penetration firestopping systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, immediately cut out and remove damaged or deteriorated penetration firestopping material and install new materials to produce systems complying with specified requirements.

END OF SECTION 07 84 13

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SECTION 07 84 43

JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes joints in or between fire-resistance-rated constructions.
- B. Related Requirements:
 - 1. Section 07 84 13 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers and for wall identification.
 - 2. Section 07 95 13.13 "Interior Expansion Joint Cover Assemblies" for fire-resistive manufactured expansion-joint cover assemblies for interior floors, walls, and ceilings.
 - 3. Section 07 95 13.16 "Exterior Expansion Joint Cover Assemblies" for fire-resistive manufactured expansion-joint cover assemblies for exterior building walls, soffits, and parapets.
 - 4. Section 09 22 16 "Non-Structural Metal Framing" for firestop tracks for metal-framed partition heads.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For sealants, indicate VOC content in g/L.
- B. Shop Drawings: Submit documentation from a qualified testing and inspection agency that is applicable to each fire-resistive joint system configuration to be installed in or between fire-resistance-rated construction and in smoke barriers for construction and linear void width.
- C. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.
 - 1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

- A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.
- B. Coordinate sizing of joints to accommodate joint firestopping systems.
- C. Notify Owner's testing agency at least seven days in advance of fire-resistive joint system installations; confirm dates and times on day preceding each series of installations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 - 1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
 - 2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
 - a. Joint firestopping systems shall bear classification marking of a qualified testing agency.

- 1) UL in its "Fire Resistance Directory."
- 2) Intertek Group in its "Directory of Listed Building Products."

2.2 JOINT FIRESTOPPING SYSTEMS

- A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
- B. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. 3M Fire Protection Products.
 - b. A/D Fire Protection Systems Inc.
 - c. CEMCO; California Expanded Metal Products Co.
 - d. ClarkDietrich.
 - e. Grabber Construction Products.
 - f. Hilti, Inc.
 - g. International Fireproof Technology Inc.
 - h. Nelson Firestop; a brand of Emerson Industrial Automation.
 - i. NUCO Inc.
 - j. Passive Fire Protection Partners.
 - k. RectorSeal Firestop; a CSW Industrials Company.
 - l. Rockwool International.
 - m. Specified Technologies, Inc.
 - n. Thermafiber, Inc.; an Owens Corning company.
 - o. Tremco, Inc.
 - p. Willseal LLC.
 2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- C. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E84.
 1. Verify sealant has a VOC content of 250 g/L or less.
- D. Accessories: Provide components of joint firestopping systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning: Before installing joint firestopping systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
 - 1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
 - 2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form-release agents from concrete.
- B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

3.3 INSTALLATION

- A. General: Install joint firestopping systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.
- B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
 - 1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.
- C. Install elastomeric fill materials for joint firestopping systems by proven techniques to produce the following results:
 - 1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
 - 2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
 - 3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.4 IDENTIFICATION

- A. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
 - 1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.

3. Designation of applicable testing agency.
4. Date of installation.
5. Manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E2393.
- B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.
- C. Keep firestopping installations accessible for inspection by authorities having jurisdiction. Proceed with enclosing joint firestopping with other construction only after inspections are complete, inspection reports are issued, and installations comply with requirements.

3.6 CLEANING AND PROTECTION

- A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.
- B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated joint firestopping systems immediately and install new materials to produce joint firestopping systems complying with specified requirements.

END OF SECTION 07 84 43

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SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Nonstaining silicone joint sealants.
2. Urethane joint sealants.
3. Immersible joint sealants.
4. Mildew-resistant joint sealants.
5. Butyl joint sealants.
6. Latex joint sealants.

- B. Related Requirements:

1. Section 07 92 19 "Acoustical Joint Sealants" for sealing joints in sound-rated construction.
2. Section 08 80 00 "Glazing" for glazing sealants.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product.

1. For sealants and sealant primers, indicate VOC content in g/L.

- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

- C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

- D. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.

4. Joint-sealant color.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and for qualified testing agency.
- B. Product Test Reports: For each kind of joint sealant, for tests performed by a qualified testing agency.
- C. Preconstruction Laboratory Test Schedule: Include the following information for each joint sealant and substrate material to be tested:
 1. Joint-sealant location and designation.
 2. Manufacturer and product name.
 3. Type of substrate material.
 4. Proposed test.
 5. Number of samples required.
- D. Preconstruction Laboratory Test Reports: From sealant manufacturer, indicating the following:
 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 2. Interpretation of test results and written recommendations for primers and substrate preparation are needed for adhesion.
- E. Preconstruction Field-Adhesion-Test Reports: Indicate which sealants and joint preparation methods resulted in optimum adhesion to joint substrates based on testing specified in "Preconstruction Testing" Article.
- F. Field-Adhesion-Test Reports: For each sealant application tested.
- G. Sample Warranties: For special warranties.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Product Testing: Test joint sealants using a qualified testing agency.
 1. Testing Agency Qualifications: Qualified according to ASTM C1021 to conduct the testing indicated.
- C. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Laboratory Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.

1. Adhesion Testing: Use ASTM C794 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Compatibility Testing: Use ASTM C1087 to determine sealant compatibility when in contact with glazing and gasket materials.
3. Stain Testing: Use ASTM C1248 to determine stain potential of sealant when in contact with stone substrates.
4. Submit manufacturer's recommended number of pieces of each type of material, including joint substrates, joint-sealant backings, and miscellaneous materials.
5. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
6. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures, including use of specially formulated primers.
7. Testing will not be required if joint-sealant manufacturers submit data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, staining of, and compatibility with joint substrates and other materials matching those submitted.

B. Preconstruction Field-Adhesion Testing: Before installing sealants, field test their adhesion to Project joint substrates as follows:

1. Locate test joints where indicated on Project or, if not indicated, as directed by Architect.
2. Conduct field tests for each kind of sealant and joint substrate.
3. Notify Architect seven days in advance of dates and times when test joints will be erected.
4. Arrange for tests to take place with joint-sealant manufacturer's technical representative present.
 - a. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - 1) For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
5. Report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. Evaluation of Preconstruction Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing, in absence of other indications of noncompliance with requirements, will be considered satisfactory. Do not use sealants that fail to adhere to joint substrates during testing.

1.8 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.9 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion unless otherwise indicated.
 - a. Warranty Period for Silicone Sealants: 10 years from date of Substantial Completion.
- C. Special warranties specified in this article exclude deterioration or failure of joint sealants from the following:
 - 1. Movement of the structure caused by stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression.
 - 2. Disintegration of joint substrates from causes exceeding design specifications.
 - 3. Mechanical damage caused by individuals, tools, or other outside agents.
 - 4. Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.
- B. VOC Content: Verify sealants and sealant primers comply with the following:
 - 1. Architectural sealants have a VOC content of 250 g/L or less.
 - 2. Sealants primers for nonporous substrates have a VOC content of 250 g/L or less.
 - 3. Sealants primers for porous substrates have a VOC content of 775 g/L or less.
- C. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 NONSTAINING SILICONE JOINT SEALANTS

- A. Nonstaining Joint Sealants: No staining of substrates when tested according to ASTM C1248.
- B. Silicone, Nonstaining, S, NS, 50, NT: Nonstaining, single-component, nonsag, plus 50 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 50, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:

- a. Pecora Corporation; Pecora 864NST.
- b. Sika Corporation; Joint Sealants; Sikasil WS-295.
- c. The Dow Chemical Company; DOW CORNING 756 SMS BUILDING SEALANT.
- d. Tremco Incorporated; Spectrem 3.

2.3 URETHANE JOINT SEALANTS

- A. Urethane, S, NS, 25, NT: Single-component, nonsag, nontraffic-use, plus 25 percent and minus 25 percent movement capability, urethane joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. BASF Corporation; MasterSeal NP 1.
- b. Pecora Corporation; Dynatrol I-XL.
- c. Polymeric Systems, Inc.; Flexiprene 1000
- d. Tremco Incorporated; Dymonic.

- B. Urethane, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Uses T and NT.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. BASF Corporation; MasterSeal SL 1.
- b. Pecora Corporation; NR-201.
- c. Polymeric Systems, Inc.; Flexiprene 952.

- C. Urethane, M, P, 25, T, NT: Multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 25, Uses T and NT.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. BASF Corporation; MasterSeal SL 2.
- b. Bostik, Inc.; Chem-Calk 555-SL.
- c. Pecora Corporation; Dynatrol II SG.
- d. Sika Corporation; Joint Sealants; Sikaflex 2c SL.
- e. Tremco Incorporated; THC 900/901.

2.4 IMMERSIBLE JOINT SEALANTS

- A. Immersible Joint Sealants. Suitable for immersion in liquids; ASTM C1247, Class 1; tested in deionized water unless otherwise indicated

- B. Urethane, Immersible, M, P, 25, T, NT, I: Immersible, multicomponent, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C920, Type M, Grade P, Class 25, Uses T, NT, and I.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. LymTal International Inc; Iso-Flex 880 GB.
- b. Master Builders Solutions; MasterSeal SL 2.

- c. Sika Corporation; Joint Sealants; Sikaflex 2c SL

2.5 MILDEW-RESISTANT JOINT SEALANTS

- A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.
- B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 25, Use NT.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; Pecora 860.
 - b. The Dow Chemical Company; DOW CORNING 786 SILICONE SEALANT.
 - c. Tremco Incorporated; Tremsil 200.

2.6 BUTYL JOINT SEALANTS

- A. Butyl-Rubber-Based Joint Sealants: ASTM C1311.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Pecora Corporation; BC-158.

2.7 LATEX JOINT SEALANTS

- A. Acrylic Latex: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP, Grade NF.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Pecora Corporation; AC-20.
 - b. Tremco Incorporated; Tremflex 834.

2.8 JOINT-SEALANT BACKING

- A. Sealant Backing Material, General: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Adfast.
 - b. Alcot Plastics Ltd.
 - c. BASF Corporation.
 - d. Construction Foam Products; a division of Nomaco, Inc.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type B (bicellular material with a surface skin), or any of the preceding types, as approved in

writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

- C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.9 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
 - 1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air. Porous joint substrates include the following:
 - a. Concrete.
 - b. Masonry.
 - c. Unglazed surfaces of ceramic tile.
 - d. Exterior insulation and finish systems.
 - 3. Remove laitance and form-release agents from concrete.

4. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants. Nonporous joint substrates include the following:
 - a. Metal.
 - b. Glass.
 - c. Porcelain enamel.
 - d. Glazed surfaces of ceramic tile.

- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.
 3. Remove absorbent sealant backings that have become wet before sealant application, and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 1. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
3. Provide concave joint profile per Figure 8A in ASTM C1193 unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:

1. Extent of Testing: Test completed and cured sealant joints as follows:
 - a. Perform 10 tests for the first 1000 feet of joint length for each kind of sealant and joint substrate.
 - b. Perform one test for each 1000 feet of joint length thereafter or one test per each floor per elevation.
2. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521.
 - a. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
3. Inspect tested joints and report on the following:
 - a. Whether sealants filled joint cavities and are free of voids.
 - b. Whether sealant dimensions and configurations comply with specified requirements.
 - c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion complies with sealant manufacturer's field-adhesion hand-pull test criteria.
4. Record test results in a field-adhesion-test log. Include dates when sealants were installed, names of persons who installed sealants, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant material, sealant configuration, and sealant dimensions.
5. Repair sealants pulled from test area by applying new sealants following same procedures used originally to seal joints. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.

B. Evaluation of Field-Adhesion-Test Results: Sealants not evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.

3.5 CLEANING

- #### A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation and contraction joints in cast-in-place concrete slabs.
 - b. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, M, P, 25, T, NT.
- B. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces subject to water immersion.
 - 1. Joint Locations:
 - a. Joints in pedestrian plazas.
 - b. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, immersible, M, P, 25, T, NT, I.
- C. Joint-Sealant Application: Exterior joints in vertical surfaces and horizontal nontraffic surfaces.
 - 1. Joint Locations:
 - a. Construction joints in cast-in-place concrete.
 - b. Control and expansion joints in masonry veneer.
 - c. Joints in exterior insulation and finish systems.
 - d. Joints between different materials listed above.
 - e. Perimeter joints between materials listed above and frames of doors, windows, and louvers.
 - f. Control and expansion joints in overhead surfaces.
 - g. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Silicone, nonstaining, S, NS, 50, NT.
- D. Joint-Sealant Application: Interior joints in horizontal traffic surfaces.
 - 1. Joint Locations:
 - a. Isolation joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated on Drawings.
 - 2. Joint Sealant: Urethane, S, P, 25, T, NT.

- E. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Tile control and expansion joints.
 - c. Vertical joints on exposed surfaces of unit masonry and concrete walls and partitions.
 - d. Other joints as indicated on Drawings.
 2. Joint Sealant: Urethane, S, NS, 25, NT.
- F. Joint-Sealant Application: Interior joints in vertical surfaces and horizontal nontraffic surfaces not subject to significant movement.
1. Joint Locations:
 - a. Control joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints between interior wall surfaces and frames of doors, windows, and elevator entrances.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Acrylic latex, paintable.
- G. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.
1. Joint Locations:
 - a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
 - b. Tile control and expansion joints where indicated.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
- H. Joint-Sealant Application: Concealed mastics.
1. Joint Locations:
 - a. Aluminum thresholds.
 - b. Sill plates.
 - c. Other joints as indicated on Drawings.
 2. Joint Sealant: Butyl-rubber based.

END OF SECTION 07 92 00

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SECTION 07 92 19

ACOUSTICAL JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes acoustical joint sealants.
- B. Related Requirements:
 - 1. Section 07 92 00 "Joint Sealants" for elastomeric, latex, and butyl-rubber-based joint sealants for nonacoustical applications.

1.3 ACTION SUBMITTALS

- A. Product Data: For each acoustical joint sealant.
 - 1. For sealants, indicate VOC content in g/L.
- B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
- C. Samples for Verification: For each kind and color of acoustical joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- D. Acoustical-Joint-Sealant Schedule: Include the following information:
 - 1. Joint-sealant application, joint location, and designation.
 - 2. Joint-sealant manufacturer and product name.
 - 3. Joint-sealant formulation.
 - 4. Joint-sealant color.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each kind of acoustical joint sealant, for tests performed by a qualified testing agency.
- B. Sample Warranties: For special warranties.

1.5 WARRANTY

- A. Special Installer's Warranty: Installer agrees to repair or replace acoustical joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Two years from date of Substantial Completion.
- B. Special Manufacturer's Warranty: Manufacturer agrees to furnish acoustical joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Provide acoustical joint-sealant products that effectively reduce airborne sound transmission through perimeter joints and openings in building construction, as demonstrated by testing representative assemblies according to ASTM E90.
 - 1. Verify sealant has a VOC content of 250 g/L or less.

2.2 ACOUSTICAL JOINT SEALANTS

- A. Acoustical Sealant for Exposed and Concealed Joints: Manufacturer's standard nonsag, paintable, nonstaining latex acoustical sealant complying with ASTM C834.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Accumetric LLC; BOSS 826 Acoustical Sound Sealant.
 - b. Everkem Diversified Products, Inc.; SoundSeal 90 Draft, Smoke and Acoustical Sound Sealant.
 - c. Franklin International; Titebond GREENchoice Professional Acoustical Smoke & Sound Sealant.
 - d. Grabber Construction Products; Acoustical Sealant GSC.
 - e. Hilti, Inc.; CP 506 Smoke and Acoustical Sealant.
 - f. OSI Sealants; Henkel Corporation; OSI Pro-Series SC-175 Acoustical Sound Sealant.
 - g. Pecora Corporation; AIS-919.
 - h. Serious Energy Inc.; Quiet Seal Pro.
 - i. Specified Technologies, Inc.; SpecSeal Smoke 'N' Sound Sealant.
 - j. Tremco Incorporated; Tremco Acoustical Sealant.
 - k. USG Corporation; SHEETROCK Acoustical Sealant.
 - 2. Colors of Exposed Acoustical Joint Sealants: As selected by Architect from manufacturer's full range of colors.

2.3 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by acoustical-joint-sealant manufacturer where required for adhesion of sealant to joint substrates.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive acoustical joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing acoustical joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where recommended by acoustical-joint-sealant manufacturer. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical joint sealant. Install acoustical joint sealants at both faces of partitions, at perimeters, and through penetrations. Comply with ASTM C919, ASTM C1193, and manufacturer's written recommendations for closing off sound-flanking paths around or through assemblies, including sealing partitions to underside of floor slabs above acoustical ceilings.

- C. Acoustical Ceiling Areas: Apply acoustical joint sealant at perimeter edge moldings of acoustical ceiling areas in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.

3.4 CLEANING

- A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of acoustical joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect acoustical joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated acoustical joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 07 92 19

SECTION 07 95 13.13

INTERIOR EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes interior expansion joint cover assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for expansion joint cover assemblies.
- B. Shop Drawings: For each expansion joint cover assembly.
 - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
 - 2. Where expansion joint cover assemblies change planes, provide isometric or clearly detailed drawing depicting how components interconnect.
- C. Samples for Initial Selection: For each type of exposed finish.
 - 1. Include manufacturer's color charts showing the full range of colors and finishes available for each exposed metal and elastomeric-seal material.
- D. Samples for Verification: For each type of expansion joint cover assembly, full width by 6 inches long in size.
- E. Expansion Joint Cover Assembly Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:
 - 1. Manufacturer and model number for each expansion joint cover assembly.
 - 2. Expansion joint cover assembly location cross-referenced to Drawings.
 - 3. Nominal, minimum, and maximum joint width.
 - 4. Movement direction.
 - 5. Materials, colors, and finishes.
 - 6. Product options.
 - 7. Fire-resistance ratings.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each fire-resistance-rated expansion joint cover assembly, for tests performed by a qualified testing agency.

1.5 QUALITY ASSURANCE

- A. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Build mockup of typical expansion joint cover assembly as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance Ratings: Provide expansion joint cover assemblies with fire barriers identical to those of systems tested for fire resistance according to UL 2079 or ASTM E1966 by a qualified testing agency.
 - 1. Hose Stream Test: Wall-to-wall and wall-to-ceiling assemblies shall be subjected to hose stream testing.
- B. Expansion Joint Design Criteria:
 - 1. Type of Movement: Thermal.
 - a. Nominal Joint Width: As indicated on Drawings.

2.3 FLOOR EXPANSION JOINT COVERS

- A. Dual-Elastomeric-Seal Floor Joint Cover: Assembly consisting of dual-elastomeric seals and center plate anchored to frames fixed to sides of joint gap.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MM Systems Corporation; Model LASB-NBR Series Expansion Joint Cover or a comparable product by one of the following:

- a. Architectural Art Manufacturing Inc.; a division of Pittcon Architectural Metals, LLC.
 - b. Balco; a CSW Industrials Company.
 - c. BASF Corp. - Watson Bowman Acme Corp.
 - d. Construction Specialties, Inc.
 - e. Inpro Corporation.
 - f. Nystrom.
2. Application: Floor to floor.
 3. Installation: Recessed.
 4. Load Capacity:
 - a. Uniform Load: 50 lb/sq. ft.
 - b. Concentrated Load: 300 lb.
 - c. Maximum Deflection: 0.0625 inch.
 5. Fire-Resistance Rating: Not less than that of adjacent construction.
 6. Center-Plate Design: Recessed to accept field-applied finish materials.
 - a. Center-Plate Recess Depth: As required to accommodate adjacent flooring.
 7. Exposed Metal:
 - a. Aluminum: Manufacturer's standard.
 - 1) Color: As selected by Architect from manufacturer's full range.
 8. Seal: Preformed elastomeric membranes or extrusions.
 - a. Color: As selected by Architect from manufacturer's full range.

2.4 WALL AND CEILING EXPANSION JOINT COVERS

- A. Dual-Elastomeric-Seal Wall/Ceiling Joint Cover: Assembly consisting of dual-elastomeric seals and center plate anchored to frames fixed to sides of joint gap.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide MM Systems Corporation; Model WD or a comparable product by one of the following:
 - a. Architectural Art Manufacturing Inc.; a division of Pittcon Architectural Metals, LLC.
 - b. Balco; a CSW Industrials Company.
 - c. BASF Corp. - Watson Bowman Acme Corp.
 - d. Construction Specialties, Inc.
 - e. Inpro Corporation.
 - f. Nystrom.
 2. Applications: Wall to wall, ceiling to ceiling.
 3. Fire-Resistance Rating: Not less than that of adjacent construction.
 4. Center-Plate Design: Plain.
 5. Exposed Metal:
 - a. Aluminum: Clear anodic, Class II.
 6. Seal: Preformed elastomeric membranes or extrusions.

- a. Color: As selected by Architect from manufacturer's full range.

2.5 MATERIALS

- A. Aluminum: ASTM B221, Alloy 6063-T5 for extrusions; ASTM B209, Alloy 6061-T6 for sheet and plate.
1. Apply manufacturer's standard protective coating on aluminum surfaces to be placed in contact with cementitious materials.
- B. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- C. Fire Barriers: Any material or material combination, when fire tested after cycling, designated to resist the passage of flame and hot gases through a movement joint and to comply with performance criteria for required fire-resistance rating.
- D. Nonmetallic, Shrinkage-Resistant Grout: ASTM C1107/C1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 ACCESSORIES

- A. Manufacturer's standard attachment devices. Include anchors, clips, fasteners, set screws, spacers, and other accessories compatible with material in contact, as indicated or required for complete installations.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Metal Frames: Perform cutting, drilling, and fitting required to install expansion joint cover assemblies.
 - 1. Repair or grout block out as required for continuous frame support using nonmetallic, shrinkage-resistant grout.
 - 2. Install frames in continuous contact with adjacent surfaces.
 - a. Shimming is not permitted.
 - 3. Install in true alignment and proper relationship to joints and adjoining finished surfaces measured from established lines and levels.
 - 4. Adjust for differences between actual structural gap and nominal design gap due to ambient temperature at time of installation.
 - 5. Cut and fit ends to accommodate thermal expansion and contraction of metal without buckling of frames.
 - 6. Locate anchors at interval recommended by manufacturer, but not less than 3 inches from each end and not more than 24 inches o.c.
- C. Seals: Install elastomeric seals and membranes in frames to comply with manufacturer's written instructions. Install with minimum number of end joints.
 - 1. Provide in continuous lengths for straight sections.
 - 2. Seal transitions. Vulcanize or heat-weld field-spliced joints as recommended by manufacturer.
 - 3. Installation: Mechanically lock seals into frames or adhere to frames with adhesive or pressure-sensitive tape as recommended by manufacturer.
- D. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- E. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.
- F. Fire-Resistance-Rated Assemblies: Coordinate installation of expansion joint cover assembly materials and associated work so complete assemblies comply with performance requirements.
 - 1. Fire Barriers: Install fire barriers to provide continuous, uninterrupted fire resistance throughout length of joint, including transitions and field splices.

3.4 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections. Where necessary due to heavy construction traffic, remove and properly store cover plates or seals and install temporary protection over expansion joint cover assemblies. Reinstall cover plates or seals prior to Substantial Completion.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 07 95 13.13

SECTION 07 95 13.16

EXTERIOR EXPANSION JOINT COVER ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes exterior expansion joint covers.
- B. Related Requirements:
 - 1. Section 07 71 29 "Manufactured Roof Expansion Joints" for factory-fabricated roof expansion joint cover assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for expansion joint cover assemblies.
- B. Shop Drawings: For each expansion joint cover assembly.
 - 1. Include plans, elevations, sections, details, splices, block-out requirement, attachments to other work, and line diagrams showing entire route of each expansion joint.
 - 2. Where expansion joint cover assemblies change planes, provide isometric or clearly detailed drawing depicting how components interconnect.
- C. Samples for Initial Selection: For each type of exposed finish.
 - 1. Include manufacturer's color charts showing the full range of colors and finishes available for each exposed metal and elastomeric seal material.
- D. Samples for Verification: For each type of expansion joint cover assembly, full width by 6 inches long in size.
- E. Expansion Joint Cover Assembly Schedule: Prepared by or under the supervision of the supplier. Include the following information in tabular form:
 - 1. Manufacturer and model number for each expansion joint cover assembly.
 - 2. Expansion joint cover assembly location cross-referenced to Drawings.
 - 3. Nominal, minimum, and maximum joint width.
 - 4. Movement direction.
 - 5. Materials, colors, and finishes.
 - 6. Product options.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each fire-resistance-rated expansion joint cover assembly, for tests performed by a qualified testing agency.

1.5 MOCKUPS

- A. Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.
1. Build mockup of typical expansion joint cover assembly as shown on Drawings.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

- A. Furnish units in longest practicable lengths to minimize field splicing.
- B. Include factory-fabricated closure materials and transition pieces, T-joints, corners, curbs, cross-connections, and other accessories as required to provide continuous expansion joint cover assemblies.

2.2 PERFORMANCE REQUIREMENTS

- A. Expansion Joint Design Criteria:
1. Type of Movement: Thermal.
 - a. Nominal Joint Width: As indicated on Drawings.

2.3 EXTERIOR EXPANSION JOINT COVERS

- A. Preformed Foam Joint Seals: Manufacturer's standard joint seal manufactured from urethane or EVA (ethylene vinyl acetate) foam with minimum density of 10 lb/cu. ft. and impregnated with a nondrying, water-repellent agent. Factory produce in precompressed sizes in roll or stick form to fit joint widths based on design criteria indicated, with factory- or field-applied adhesive for bonding to substrates.
1. Products: Subject to compliance with requirements, provide the following:
 - a. EMSEAL Joint Systems, Ltd; Colorseal.
 2. Design Criteria:
 - a. Nominal Joint Width: As indicated on Drawings.
 - b. Movement Capability: -50 percent/+50 percent.

3. Joint Seal Color: As selected by Architect from full range of industry colors.

2.4 MATERIALS

- A. Elastomeric Seals: Manufacturer's standard preformed elastomeric membranes or extrusions to be installed in metal frames.
- B. Moisture Barrier: Manufacturer's standard, flexible elastomeric material.

2.5 ACCESSORIES

- A. Moisture Barriers: Manufacturer's standard continuous, waterproof membrane within joint and attached to substrate on sides of joint.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces where expansion joint cover assemblies will be installed for installation tolerances and other conditions affecting performance of the Work.
- B. Notify Architect where discrepancies occur that will affect proper expansion joint cover assembly installation and performance.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to expansion joint cover assembly manufacturer's written instructions.
- B. Coordinate and furnish anchorages, setting drawings, and instructions for installing expansion joint cover assemblies. Provide fasteners of metal, type, and size to suit type of construction indicated and to provide for secure attachment of expansion joint cover assemblies.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for storing, handling, and installing expansion joint cover assemblies and materials unless more stringent requirements are indicated.
- B. Preformed Foam Joint Seals: Install in compliance with manufacturer's written instructions. Install with minimum number of end joints.
 1. Install each length of seal immediately after removing protective wrapping.
 2. Firmly secure compressed joint seals to joint gap side to obtain full bond using exposed pressure-sensitive adhesive or field-applied adhesive as recommended by manufacturer.
 3. Do not pull or stretch material. Produce seal continuity at splices, ends, turns, and intersections of joints.
 4. For applications at low ambient temperatures, heat foam joint seal material in compliance with manufacturer's written instructions.

- C. Install with hairline mitered corners where expansion joint cover assemblies change direction or abut other materials.
- D. Terminate exposed ends of expansion joint cover assemblies with field- or factory-fabricated termination devices.
- E. Moisture Barrier Drainage: If indicated, provide drainage fitting and connect to drains.

3.4 CONNECTIONS

- A. Transition to Roof Expansion Joint Covers: Coordinate installation of exterior wall and soffit expansion joint covers with roof expansion joint covers specified in Section 07 71 29 " Roof Expansion Joints." Install factory-fabricated units at transition between exterior walls and soffits and roof expansion joint cover assemblies.

3.5 PROTECTION

- A. Do not remove protective covering until finish work in adjacent areas is complete. When protective covering is removed, clean exposed metal surfaces to comply with manufacturer's written instructions.
- B. Protect the installation from damage by work of other Sections.

END OF SECTION 07 95 13.16

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 08 - OPENINGS

08 11 13	HOLLOW METAL DOORS AND FRAMES
08 14 16	FLUSH WOOD DOORS
08 14 33	STILE AND RAIL WOOD DOORS
08 16 13.13	FIBERGLASS TERRACE DOORS
08 31 13	ACCESS DOORS AND FRAMES
08 36 13	SECTIONAL DOORS
08 41 13	ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS
08 54 00	COMPOSITE WINDOWS
08 71 01	DOOR HARDWARE - INDEPENDENT LIVING
08 71 02	DOOR HARDWARE - ASSISTED LIVING/MEMORY CARE
08 71 03	DOOR HARDWARE - COMMONS
08 80 00	GLAZING
08 83 00	MIRRORS
08 88 13	FIRE-RATED GLAZING
08 91 19	FIXED LOUVERS

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SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:

- 1. Interior standard steel doors and frames.
- 2. Exterior standard steel doors and frames.

- B. Related Requirements:

- 1. Section 08 71 00 "Door Hardware" for door hardware for hollow-metal doors.
- 2. Section 09 91 13 "Exterior Painting" and Section 09 91 23 "Interior Painting" for field painting of hollow metal doors and frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to ANSI/SDI A250.8.

1.4 COORDINATION

- A. Coordinate anchorage installation for hollow-metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.
- B. Coordinate requirements for installation of door hardware, electrified door hardware, and access control and security systems.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.

2. For products having recycled content, indicate postconsumer and preconsumer recycled content.

B. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
7. Details of anchorages, joints, field splices, and connections.
8. Details of accessories.
9. Details of moldings, removable stops, and glazing.
10. Manufacturer's published details can be submitted in lieu of Shop Drawings for hollow-metal work.

- C. Product Schedule: For hollow-metal doors and frames, prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final door hardware schedule.

1.7 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each type of fire-rated hollow-metal door and frame assembly and thermally rated door assemblies for tests performed by a qualified testing agency indicating compliance with performance requirements.

1.8 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow-metal doors and frames palletized, packaged, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
1. Provide additional protection to prevent damage to factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow-metal doors and frames vertically under cover at Project site with head up. Place on minimum 4-inch-high wood blocking. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Ceco Door; ASSA ABLOY.
 - 2. Curries Company; ASSA ABLOY.
 - 3. Pioneer Industries.
 - 4. Republic Doors and Frames.
 - 5. Steelcraft; an Allegion brand.
- B. Source Limitations: Obtain hollow-metal work from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated on Drawings, based on testing at positive pressure according to NFPA 252 or UL 10C.
 - 1. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

2.3 INTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 2; ANSI/SDI A250.4, Level B.
 - 1. Doors:
 - a. Type: As indicated in the Door and Frame Schedule.
 - b. Thickness: 1-3/4 inches.
 - c. Face: Uncoated steel sheet, minimum thickness of 0.042 inch (nominal 18-gage).
 - d. Edge Construction: Model 1, Full Flush.
 - e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
 - f. Core: Manufacturer's standard.
 - g. Fire-Rated Core: Manufacturer's standard vertical steel stiffener core for fire-rated doors.
 - 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (nominal 16-gage).
 - b. Construction: Face welded.
 - 1) Knocked-down frames can be provided at framed openings in gypsum board wall or partition construction where accepted by Architect.

3. Exposed Finish: Prime.

2.4 EXTERIOR STANDARD STEEL DOORS AND FRAMES

- A. Construct hollow-metal doors and frames to comply with standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.
- B. Extra-Heavy-Duty Doors and Frames: ANSI/SDI A250.8, Level 3; ANSI/SDI A250.4, Level A.

1. Doors:

- a. Type: As indicated in the Door and Frame Schedule.
- b. Thickness: 1-3/4 inches.
- c. Face: Metallic-coated steel sheet, minimum thickness of 0.053 inch (nominal 16-gage), with minimum A60 coating.
- d. Edge Construction: Model 1, Full Flush.
- e. Edge Bevel: Provide manufacturer's standard beveled or square edges.
- f. Top Edge Closures: Close top edges of doors with flush closures of same material as face sheets. Seal joints against water penetration.
- g. Bottom Edges: Close bottom edges of doors where required for attachment of weather stripping with end closures or channels of same material as face sheets. Provide weep-hole openings in bottoms of exterior doors to permit moisture to escape.
- h. Core: Manufacturer's standard.

- 1) Thermally Rated Door Assemblies: Provide door assemblies with U-factor of not more than 0.40 deg Btu/F x h x sq. ft. when tested according to ASTM C518.

2. Frames:

- a. Materials: Metallic-coated steel sheet, minimum thickness of 0.053 inch (nominal 16-gage), with minimum A60 coating.
- b. Construction: Face welded.

3. Exposed Finish: Prime.

2.5 FRAME ANCHORS

A. Jamb Anchors:

1. Type: Anchors of minimum size and type required by applicable door and frame standard, and suitable for performance level indicated.
2. Quantity: Minimum of three anchors per jamb, with one additional anchor for frames with no floor anchor. Provide one additional anchor for each 24 inches of frame height above 7 feet.
3. Postinstalled Expansion Anchor: Minimum 3/8-inch-diameter bolts with expansion shields or inserts, with manufacturer's standard pipe spacer.

- B. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor.

- C. Material: ASTM A879/A879M, Commercial Steel (CS), 04Z coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A1008/A1008M or ASTM A1011/A1011M; hot-dip galvanized according to ASTM A153/A153M, Class B.

2.6 MATERIALS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- C. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- D. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- F. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.
- G. Mineral-Fiber Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E136 for combustion characteristics.

2.7 FABRICATION

- A. Hollow-Metal Frames: Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as frames.
 - 1. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 2. Door Silencers: Except on weather-stripped frames, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- B. Hardware Preparation: Factory prepare hollow-metal doors and frames to receive templated mortised hardware, and electrical wiring; include cutouts, reinforcement, mortising, drilling, and tapping according to ANSI/SDI A250.6, the Door Hardware Schedule, and templates.
 - 1. Reinforce doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.
 - 2. Comply with BHMA A156.115 for preparing hollow-metal doors and frames for hardware.
- C. Glazed Lites: Provide stops and moldings around glazed lites where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

1. Provide stops and moldings flush with face of door, and with beveled stops unless otherwise indicated.
2. Multiple Glazed Lites: Provide fixed and removable stops and moldings so that each glazed lite is capable of being removed independently.
3. Provide fixed frame moldings on outside of exterior and on secure side of interior doors and frames. Provide loose stops and moldings on inside of hollow-metal doors and frames.
4. Coordinate rabbet width between fixed and removable stops with glazing and installation types indicated.
5. Provide stops for installation with countersunk flat- or oval-head machine screws spaced uniformly not more than 9 inches o.c. and not more than 2 inches o.c. from each corner.

2.8 STEEL FINISHES

- A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.
 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces. Touch up factory-applied finishes where spreaders are removed.
- B. Drill and tap doors and frames to receive nontemplated, mortised, and surface-mounted door hardware.

3.2 INSTALLATION

- A. Install hollow-metal doors and frames plumb, rigid, properly aligned, and securely fastened in place. Comply with approved Shop Drawings and with manufacturer's written instructions.
- B. Hollow-Metal Frames: Comply with ANSI/SDI A250.11.
 1. Set frames accurately in position; plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces without damage to completed Work.
 - a. Where frames are fabricated in sections, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces. Touch-up finishes.
 - b. Install frames with removable stops located on secure side of opening.
 2. Fire-Rated Openings: Install frames according to NFPA 80.
 3. Floor Anchors: Secure with postinstalled expansion anchors.
 - a. Floor anchors may be set with power-actuated fasteners instead of postinstalled expansion anchors if so indicated and approved on Shop Drawings.

4. Solidly pack mineral-fiber insulation inside frames.
 5. Masonry Walls: Coordinate installation of frames to allow for solidly filling space between frames and masonry with grout or mortar.
 6. In-Place Concrete or Masonry Construction: Secure frames in place with postinstalled expansion anchors. Countersink anchors, and fill and make smooth, flush, and invisible on exposed faces.
 7. Installation Tolerances: Adjust hollow-metal frames to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
- C. Hollow-Metal Doors: Fit and adjust hollow-metal doors accurately in frames, within clearances specified below.
1. Non-Fire-Rated Steel Doors: Comply with ANSI/SDI A250.8.
 2. Fire-Rated Doors: Install doors with clearances according to NFPA 80.
 3. Smoke-Control Doors: Install doors according to NFPA 105.
- D. Glazing: Comply with installation requirements in Section 08 80 00 "Glazing," Section 08 88 13 "Fire-Rated Glazing," and with hollow-metal manufacturer's written instructions.

3.3 REPAIR

- A. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- B. Metallic-Coated Surface Touchup: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08 11 13

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SECTION 08 14 16

FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Five-ply flush wood doors for opaque finish.
2. Hollow-core flush wood doors for opaque finish.
3. Factory priming flush wood doors indicated to be field painted.
4. Factory fitting flush wood doors to frames and factory machining for hardware.

- B. Related Requirements:

1. Section 08 80 00 "Glazing" for glass view panels in flush wood doors.
2. Section 09 91 23 "Interior Painting" for field finishing doors.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including the following:

1. Door core materials and construction.
2. Door edge construction
3. Door face type and characteristics.
4. Door trim for openings.
5. Door frame construction.
6. Factory-machining criteria.
7. Factory-priming specifications.

- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data; and the following:

1. Door schedule indicating door location, type, size, fire protection rating, and swing.
2. Door elevations, dimension and locations of hardware, lite and louver cutouts, and glazing thicknesses.
3. Details of frame for each frame type, including dimensions and profile.
4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.

5. Dimensions and locations of blocking for hardware attachment.
6. Dimensions and locations of mortises and holes for hardware.
7. Clearances and undercuts.
8. Doors to be factory primed and application requirements.

C. Samples: Frames for light openings, 6 inches long, for each material, type, and finish required.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Special warranties.

B. Record Documents: For fire-rated doors, list of door numbers and applicable room name and number to which door accesses.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with requirements of referenced standard and manufacturer's written instructions.

B. Package doors individually in plastic bags or cardboard cartons.

C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet-work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of construction period.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

- a. Delamination of veneer.
- b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
- c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.

2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.

3. Warranty Period for Solid-Core Interior Doors: Life of installation.

4. Warranty Period for Hollow-Core Interior Doors: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Wood Door and Frame Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated on Drawings, based on testing at positive pressure in accordance with UL 10C or NFPA 252.
- B. Smoke- and Draft-Control Door Assemblies: Listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing in accordance with UL 1784 and installed in compliance with NFPA 105.

2.2 FLUSH WOOD DOORS, GENERAL

- A. Quality Standard: In addition to requirements specified, comply with ANSI/WDMA I.S. 1A.

2.3 SOLID-CORE FIVE-PLY FLUSH WOOD DOORS FOR OPAQUE FINISH

- A. Interior Solid-Core Doors:
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Algoma Hardwoods, Inc.
 - b. Eggers Industries.
 - c. Graham Wood Doors; ASSA ABLOY Group company.
 - d. Marshfield DoorSystems, Inc.
 - e. Mohawk Doors, Inc.
 - f. Oshkosh Door Company.
 - g. Vancouver Door Company.
 - h. VT Industries Inc.
 - 2. Performance Grade:
 - a. ANSI/WDMA I.S. 1A Heavy Duty unless otherwise indicated on Drawings.
 - b. ANSI/WDMA I.S. 1A Extra Heavy Duty: Public toilets, janitor's closets, assembly spaces, exits, and where indicated on Drawings.
 - c. ANSI/WDMA I.S. 1A Standard Duty: Closets (not including janitor's closets), private toilets, and where indicated on Drawings,
 - 3. ANSI/WDMA I.S. 1A Grade: Custom.
 - 4. Faces: MDO.
 - a. Apply MDO to standard-thickness, closed-grain, hardwood face veneers or directly to high-density hardboard crossbands.
 - 5. Exposed Vertical and Top Edges: Any closed-grain hardwood.
 - a. Fire-Rated Single Doors: Provide edge construction with intumescent seals concealed by outer stile. Comply with specified requirements for exposed vertical edges.

- b. Fire-Rated Pairs of Doors: Provide fire-retardant stiles that are listed and labeled for applications indicated without formed-steel edges and astragals. Provide stiles with concealed intumescent seals. Comply with specified requirements for exposed edges.
 - c. Mineral-Core Doors: At hinge stiles, provide laminated-edge construction with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.
 - 1) Screw-Holding Capability: 550 lbf in accordance with WDMA T.M. 10.
6. Core for Non-Fire-Rated Doors:
- a. Either glued wood stave or WDMA I.S. 10 structural composite lumber.
7. Core for Fire-Rated Doors: As required to achieve fire-protection rating indicated on Drawings.
- a. Blocking for Mineral-Core Doors: Provide composite blocking with improved screw-holding capability approved for use in doors of fire-protection ratings indicated on Drawings as needed to eliminate through-bolting hardware.
8. Construction: Five plies, hot-pressed bonded (vertical and horizontal edging is bonded to core), with entire unit abrasive planed before veneering.

2.4 HOLLOW-CORE FLUSH WOOD DOORS FOR OPAQUE FINISH

A. Interior Doors:

- 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. JELD-WEN, Inc.
 - b. Masonite International Corporation.
 - c. Mohawk Doors.
- 2. Performance Grade: WDMA ANSI/I.S. 1A Standard Duty.
- 3. ANSI/WDMA I.S. 1A Grade: Custom.
- 4. Faces: Hardboard or MDF.
 - a. Hardboard Faces: ANSI A135.4, Class 1 (tempered) or Class 2 (standard).
 - b. MDF Faces: ANSI A208.2, Grade 150 or Grade 160.
- 5. Exposed Vertical and Top Edges: Any closed-grain hardwood.
- 6. Construction: Standard hollow core.
- 7. Blocking: Provide wood blocking with minimum dimensions as follows:
 - a. 5-by-18-inch lock blocks at both stiles.
 - b. 5-inch top-rail blocking.
 - c. 10-inch bottom-rail blocking.
 - d. 2-1/2-inch midrail blocking.
- 8. Jamb: Grade P (paint and overlay); one-piece flat jamb-open dados.

9. Casings: Stock size moldings WMMPA WM 4, Grade P for opaque field finish softwood, Casing 11/16 inches x 3-1/4 inches; miter and spline corners; glue and staple to frame.
10. Hardware: Pre-rout frame, and provide installed hinges with radius corners, Refer to door hardware schedule for finish of strike plate and latch bolt.

2.5 LIGHT FRAMES

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads unless otherwise indicated.
 1. Wood Species: Same species as door faces.
 2. Profile: Manufacturer's standard shape.
 3. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.
- B. Metal Frames for Light Openings in Fire-Rated Doors: Manufacturer's standard frame formed of 0.048-inch-thick, cold-rolled steel sheet; factory primed for paint finish; and approved for use in doors of fire-protection rating indicated on Drawings.

2.6 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated.
 1. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 2. Comply with NFPA 80 requirements for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied.
 1. Locate hardware to comply with DHI-WDHS-3.
 2. Comply with final hardware schedules, door frame Shop Drawings, ANSI/BHMA-156.115-W, and hardware templates.
 3. Coordinate with hardware mortises in metal frames, to verify dimensions and alignment before factory machining.
 4. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
- C. Openings: Factory cut and trim openings through doors.
 1. Light Openings: Trim openings with moldings of material and profile indicated.

2.7 FACTORY PRIMING

- A. Doors for Opaque Finish: Factory prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 09 91 23" Interior Painting."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.

1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Hardware: For installation, see Section 08 71 00 "Door Hardware."

B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.

C. Install frames level, plumb, true, and straight.

1. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
2. Anchor frames to anchors or blocking built in or directly attached to substrates.
 - a. Secure with countersunk, concealed fasteners and blind nailing.
 - b. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with woodwork.

1) For factory-finished items, use filler matching finish of items being installed.

3. Install fire-rated doors and frames in accordance with NFPA 80.
4. Install smoke- and draft-control doors in accordance with NFPA 105.

D. Job-Fitted Doors:

1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
 - a. Do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors.
2. Machine doors for hardware.
3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
4. Clearances:
 - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
 - b. Provide 1/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.
 - c. Where threshold is shown or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
 - d. Comply with NFPA 80 for fire-rated doors.
5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
6. Bevel fire-rated doors 1/8 inch in 2 inches at lock edge; trim stiles and rails only to extent permitted by labeling agency.

E. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 16

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SECTION 08 14 33

STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior stile and rail wood doors.
 - 2. Factory fitting stile and rail wood doors to frames and factory machining for hardware.
 - 3. Factory priming.
- B. Related Requirements:
 - 1. Section 09 91 23 "Interior Painting" for field painting of stile and rail wood doors.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including the following:
 - 1. Details of construction and glazing.
 - 2. Factory-machining criteria.
 - 3. Factory-priming specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each type of door; construction details not covered in Product Data, including those for stiles, rails, panels, and moldings (sticking); and other pertinent data, including the following:
 - 1. Door schedule indicating door and frame location, type, size, fire protection rating, and swing.
 - 2. Door elevations, dimensions and location of hardware, lite locations, and glazing thickness.
 - 3. Details of frame for each frame type, including dimensions and profile.
 - 4. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
 - 5. Dimensions and locations of mortises and holes for hardware.
 - 6. Clearances and undercuts.
 - 7. Doors to be factory primed and application requirements.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS.

- A. Special warranties.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in opaque plastic bags or cardboard cartons.
- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining temperature and relative humidity levels designed for building occupants for the remainder of construction period.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of veneer.
 - b. Warping (bow, cup, or twist) more than 1/4 inch in a 42-by-84-inch section.
 - c. Telegraphing of core construction in face veneers exceeding 0.01 inch in a 3-inch span.
 - 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 3. Warranty shall be in effect during specified period of time from date of Substantial Completion.
 - 4. Warranty Period for Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain stile and rail wood doors from single manufacturer.

2.2 MATERIALS

- A. Use only materials that comply with referenced standards and other requirements specified.
 - 1. Assemble interior doors, including components, with either dry-use or wet-use adhesives complying with ASTM D5572 for finger joints and with ASTM D5751 for joints other than finger joints.
- B. Safety Glass: Provide products complying with testing requirements in 16 CFR 1201, for Category II materials, unless those of Category I are expressly indicated and permitted.

2.3 INTERIOR STILE AND RAIL WOOD DOORS

- A. Interior Stile and Rail Wood Doors: Interior stock doors complying with WDMA I.S. 6A and with other requirements specified.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Assa Abloy, Maiman.
 - b. Karona by JELD-WEN.
 - c. Masonite Architectural.
 - d. VT Industries Inc.
 - 2. Performance Grade: WDMA I.S. 6A Heavy Duty.
 - 3. WDMA I.S. 6A Grade: Custom.
 - 4. Finish: Opaque.
 - 5. Door Construction for Opaque Finish:
 - a. Stile and Rail Construction: Veneered, structural composite lumber or veneered edge- and end-glued lumber.
 - 6. Stile and Rail Widths: As indicated.
 - 7. Molding Profile (Sticking): As selected by Architect from manufacturer's full range.
 - 8. Glass: Uncoated, clear, fully tempered float glass, 5.0 mm thick, complying with Section 08 80 00 "Glazing."
 - 9. Mark, label, or otherwise identify stile and rail wood doors as complying with WDMA I.S. 6A and grade specified.

2.4 STILE AND RAIL WOOD DOOR FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated, with the following uniform clearances and bevels unless otherwise indicated:
 - 1. Clearances:
 - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
 - b. Provide 1/2 inch from bottom of door to top of decorative floor finish or covering.
 - c. Where threshold is shown on Drawings or scheduled, provide not more than 3/8 inch from bottom of door to top of threshold.
 - 2. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.

- B. Fabricate stile and rail wood doors in sizes indicated for field fitting.
- C. Factory machine doors for hardware that is not surface applied.
 - 1. Locate hardware to comply with DHI-WDHS-3.
 - 2. Comply with final hardware schedules, door frame Shop Drawings, BHMA-156.115-W, and hardware templates.
 - 3. For doors scheduled to receive electrified locksets, provide factory-installed raceway and wiring to accommodate specified hardware.
 - 4. Coordinate measurements of hardware mortises in metal frames to verify dimensions and alignment before factory machining.
- D. Glazed Openings: Trim openings indicated for glazing with solid-wood moldings, with one side removable. Miter wood moldings at corner joints.

2.5 FACTORY PRIMING

- A. Doors for Opaque Finish: Shop prime faces, all four edges, edges of cutouts, and mortises with one coat of wood primer specified in Section 09 91 23 "Interior Painting."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and installed door frames, with Installer present, before hanging doors.
 - 1. Verify that installed frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 - 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Hardware: For installation, see Section 08 71 00 "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
 - 1. Install smoke- and draft-control doors according to NFPA 105.
- C. Job-Fitted Doors:
 - 1. Align and fit doors in frames with uniform clearances and bevels as indicated below.
 - 2. Machine doors for hardware.
 - 3. Seal edges of doors, edges of cutouts, and mortises after fitting and machining.
 - 4. Clearances:
 - a. Provide 1/8 inch at heads, jambs, and between pairs of doors.
 - b. Provide 3/8 inch from bottom of door to top of decorative floor finish or covering unless otherwise indicated on Drawings.

- c. Where threshold is shown on Drawings or scheduled, provide 1/4 inch from bottom of door to top of threshold unless otherwise indicated.
- 5. Bevel non-fire-rated doors 1/8 inch in 2 inches at lock and hinge edges.
- D. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

3.3 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Replace doors that are damaged or do not comply with requirements. Doors may be repaired or refinished if Work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 33

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SECTION 08 16 13.13

FIBERGLASS TERRACE DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fiberglass terrace doors for exterior locations.
- B. Related Requirements:
 - 1. Section 08 71 00 "Door Hardware" for hardware not specified in this Section.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of fiberglass terrace door.
 - 1. Include construction details, material descriptions, fabrication methods, dimensions of individual components and profiles, hardware, finishes, and operating instructions.
 - 2. Include details of sections at all unique threshold conditions and surrounding work, including interior floor substrates, interior floor finishes, exterior balcony/slab materials, waterproofing, joint sealants, etc., indicating relevant dimensions and demonstrating compliance with Fair Housing Accessibility Guidelines and dimensional requirements indicated on Drawings.
- B. Shop Drawings: For fiberglass terrace doors.
 - 1. Include plans, elevations, sections, and details; hardware; attachments to other work, and between doors, if any; and operational clearances.
- C. Samples: For each fiberglass terrace door and for each color and texture specified, 12-inch-long section with weather stripping, glazing bead and factory-applied color finish.
- D. Product Schedule: For fiberglass terrace doors. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer, Installer, and testing agency.

- B. Product Test Reports: For each fiberglass terrace door, for tests performed by a qualified testing agency; and for each class and performance grade indicated, tested at AAMA gateway size.
- C. Field quality-control reports.
- D. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes, weather stripping, operable panels, and operating hardware to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer capable of fabricating fiberglass terrace doors that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.
- B. Installer Qualifications: An installer acceptable to fiberglass terrace door manufacturer for installation of units required for this Project.
- C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 - 1. Build mockup for fiberglass terrace doors, as shown on Drawings.
 - 2. Include threshold with adjacent finish flooring and balcony/slab materials at each unique condition in order to demonstrate compliance with Fair Housing Accessibility Guidelines and dimensional requirements indicated on Drawings.
 - 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 WARRANTY

- A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace components of aluminum terrace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to meet performance requirements.
 - b. Structural failures including excessive deflection.
 - c. Excessive water leakage or air infiltration.
 - d. Faulty operation of movable panels and hardware.
 - e. Deterioration of finishes and other materials beyond normal weathering.
 - f. Failure of insulating glass.
 - 2. Warranty Period:
 - a. Fiberglass Terrace Door: Three years from date of Substantial Completion.

- b. Insulating-Glass Units: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:
1. ProVia; Heritage French Patio Doors.
- B. Source Limitations: Obtain fiberglass terrace doors from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Product Standard: AAMA/WDMA/CSA 101/I.S.2/A440.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
1. Minimum Performance Class and Grade: LC - 25.
- C. Accessible Entrances: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.
- D. Thermal Transmittance: NFRC 100 maximum total fenestration product U-factor of 0.77 Btu/sq. ft. x h x deg F.
- E. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum total fenestration product SHGC of 0.40.

2.3 FIBERGLASS TERRACE DOORS

- A. Frames and Sashes: Impact-resistant, UV-stabilized PVC complying with AAMA/WDMA/CSA 101/I.S.2/A440.
1. Exterior Color: As selected by Architect from manufacturer's full range.
 2. Interior Color: As selected by Architect from manufacturer's full range.
- B. Threshold: Provide extruded-aluminum threshold of thickness, dimensions, and profile indicated; designed to comply with performance requirements indicated and to drain to the exterior; with manufacturer's standard finish.
1. Low-Profile Threshold: ADA-ABA compliant.

2.4 GLAZING

- A. Glass and Glazing: Manufacturer's standard glazing system that produces weathertight seal.

1. Glass: ASTM C1036, Type 1, q3, Category II safety glass complying with testing requirements in 16 CFR 1201.
2. Safety Glazing Labeling: Permanently mark safety glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
3. Tint: Clear.
4. Insulating-Glass Units: ASTM E2190.
 - a. Filling: Fill space between glass lites with argon.
 - b. Low-E Coating: Manufacturer's standard.

2.5 HARDWARE

- A. General: Provide manufacturer's standard hardware, fabricated from a corrosion-resistant material complying with AAMA 907 and designed to smoothly operate, tightly close, and securely lock fiberglass terrace doors.
- B. Lock: Install manufacturer's standard keyed multipoint locking device on each operable panel, lockable from the inside only.
 1. Design: As selected from manufacturer's full range.
 2. Finish: As selected from manufacturer's full range of finishes.

2.6 INSECT SCREENS

- A. General: Design fiberglass terrace doors to accommodate screens in a tight-fitting, removable arrangement, fully integrated with door frame. Provide screen for each operable door panel.
- B. Aluminum Frames: Manufacturer's standard extruded aluminum profile fabricated from aluminum alloy complying with SMA 1201 and finished to match door frame. Fabricate frames with mitered or coped joints or corner extrusions, concealed fasteners, and removable PVC spline/anchor concealing edge of frame.
- C. Glass-Fiber Mesh Fabric: ASTM D3656, 18-by-14 or 18-by-16 count per sq. in. mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656.
 1. Mesh Color: Charcoal gray.
- D. Hardware: Manufacturer's standard noncorrosive metal.
 1. Lock: Manufacturer's standard pull and keyless locking device on each movable panel, lockable from inside only, designed to allow unobstructed movement of panel across adjacent panel.

2.7 ACCESSORIES

- A. Fasteners: Noncorrosive and compatible with door members, trim, hardware, anchors, and other components.

1. Exposed Fasteners: Do not use exposed fasteners to the greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.
- B. Anchors, Clips, and Accessories: Provide anchors, clips, and accessories of aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron for fiberglass terrace doors, complying with ASTM B 456 or ASTM B 633 for SC 3 severe service conditions; provide sufficient strength to withstand design pressure indicated.

2.8 FABRICATION

- A. Fabricate fiberglass terrace doors in sizes indicated. Include a complete system for assembling components and anchoring doors.
- B. Fabricate fiberglass terrace doors that are reglazable without dismantling panel framing.
- C. Weather Stripping: Provide full-perimeter weather stripping for each door panel.
- D. Weep Holes: Provide weep holes and internal drainage passages to conduct infiltrating water to exterior.
- E. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation.
- F. Factory-Glazed Fabrication: Glaze fiberglass terrace doors in the factory where practical and possible for applications indicated. Comply with requirements in Section 08 80 00 "Glazing" and with AAMA/WDMA/CSA 101/I.S.2/A440.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of Work.
- B. Verify rough opening dimensions, levelness of threshold substrate, and operational clearances.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure a coordinated, weathertight fiberglass terrace door installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with Drawings, Shop Drawings, and manufacturer's written instructions for installing doors, hardware, accessories, and other components.
- B. Install fiberglass terrace doors level, plumb, square, true to line; without distortion, warp, or rack of frames and panels and without impeding thermal movement; anchored securely in place to structural support; and in proper relation to wall flashing, vapor retarders, air barriers, water/weather barriers, and other adjacent construction.

- C. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.
- D. Install fiberglass terrace doors and components to drain condensation, water-penetrating joints, and moisture migrating within doors to the exterior.
- E. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
 - 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Testing Services: Test and inspect installed fiberglass terrace doors as follows:
 - 1. Testing Methodology: Test aluminum terrace doors for air infiltration and water resistance according to AAMA 502.
 - 2. Air-Infiltration Testing:
 - a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
 - b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.
 - 3. Water-Resistance Testing:
 - a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
 - b. Allowable Water Infiltration: No water penetration.
 - 4. Testing Extent: Three fiberglass terrace doors of each type as selected by Architect and a qualified independent testing and inspecting agency. Conduct tests after perimeter sealants have cured.
 - 5. Test Reports: Prepared according to AAMA 502.
- C. Fiberglass terrace door will be considered defective if it does not pass tests and inspections.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Lubricate hardware and moving parts.
- B. Adjust operating panels to provide a tight fit at contact points and weather stripping for smooth operation, without binding, and a weathertight closure. Adjust hardware for proper alignment, smooth operation, and proper latching without unnecessary force or excessive clearance.
- C. Clean exposed surfaces immediately after installing fiberglass terrace doors. Avoid damaging protective coatings and finishes. Remove nonpermanent labels, excess sealants, glazing materials, dirt, and other substances.

- D. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.
- E. Refinish or replace fiberglass terrace doors with damaged finishes.
- F. Replace damaged components.

END OF SECTION 08 16 13.13

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SECTION 08 31 13

ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Access doors and frames.
- 2. Fire-rated access doors and frames.

- B. Related Requirements:

- 1. Section 07 72 00 "Roof Accessories" for roof hatches.
- 2. Division 23 sections for heating and air-conditioning duct access doors.

1.3 COORDINATION

- A. Coordinate size of access doors and frames to ensure that access to concealed items is accommodated in compliance with requirements of authorities having jurisdiction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.

- B. Product Schedule: Types, locations, sizes, latching or locking provisions, and other data pertinent to installation.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Details, drawn to scale, depicting access to items to be concealed by access doors and frames as well as clearances required for proper access to maintain equipment.

1.7 CLOSEOUT SUBMITTALS

- A. Record Documents: For fire-rated doors, list of applicable room name and number in which access door is located.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Activar Construction Products Group, Inc. - JL Industries.
 - 2. Karp Associates, Inc.
 - 3. Larsens Manufacturing Company.
 - 4. Milcor; a division of Hart & Cooley, Inc.
 - 5. Nystrom.
 - 6. Williams Bros. Corporation of America (The).
- B. Source Limitations: Obtain each type of access door and frame from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Access Doors and Frames: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, according to NFPA 252 or UL 10B.

2.3 ACCESS DOORS AND FRAMES

- A. Flush Access Doors with Exposed Flanges:
 - 1. Description: Face of door flush with frame, with exposed flange and concealed hinge.
 - 2. Locations: Wall and ceiling.
 - 3. Door Size: As required to give required access for concealed items, 12 inch by 12 inch minimum.
 - 4. Uncoated Steel Sheet for Door: Nominal 0.060 inch, 16 gage, factory primed.
 - a. Locations: Provide in non-rated interior gypsum board assemblies unless otherwise indicated.
 - 5. Metallic-Coated Steel Sheet for Door: Nominal 0.064 inch, 16 gage, factory primed.
 - a. Locations: Provide in non-rated gypsum board assemblies where exposed to exterior (such as gypsum soffits) and on interior side of exterior masonry wall construction.
 - 6. Stainless Steel Sheet for Door: Nominal 0.062 inch, 16 gage, ASTM A480/A480M No. 4 finish.
 - a. Locations: Provide in non-rated gypsum board assemblies in wet locations such as in locker and toilet rooms, and other areas subject to high humidity.

7. Frame Material: Same material, thickness, and finish as door.
8. Latch and Lock: Cam latch, key operated.

2.4 FIRE-RATED ACCESS DOORS AND FRAMES

A. Fire-Rated, Flush Access Doors with Exposed Flanges:

1. Description: Door face flush with frame, uninsulated; with exposed flange, self-closing door, and concealed hinge.
2. Locations: Wall and ceiling.
3. Door Size: As required to give required access for concealed items, 12 inch by 12 inch minimum.
4. Fire-Resistance Rating: Not less than that of adjacent construction.
5. Uncoated Steel Sheet for Door: Nominal 0.036 inch, 20 gage, factory primed.
 - a. Locations: Provide in fire-rated interior wall and ceiling assemblies unless otherwise indicated.
6. Metallic-Coated Steel Sheet for Door: Nominal 0.040 inch, 20 gage, factory primed.
 - a. Locations: Provide in fire-rated assemblies where exposed to exterior (such as gypsum soffits) and on interior side of exterior fire-rated construction.
7. Stainless Steel Sheet for Door: Nominal 0.038 inch, 20 gage, ASTM A480/A480M No. 4 finish.
 - a. Locations: Provide in fire-rated gypsum board assemblies in wet locations such as in locker and toilet rooms, and other areas subject to high humidity.
8. Frame Material: Same material, thickness, and finish as door.
9. Latch and Lock: Self-latching door hardware, operated by key.

2.5 MATERIALS

- A. Steel Plates, Shapes, and Bars: ASTM A36/A36M.
- B. Steel Sheet: Uncoated or electrolytic zinc coated, ASTM A879/A879M, with cold-rolled steel sheet substrate complying with ASTM A1008/A1008M, Commercial Steel (CS), exposed.
- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B; with minimum G60 or A60 metallic coating.
- D. Stainless Steel Plate, Sheet, and Strip: ASTM A240/A240M or ASTM A666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.
- E. Stainless Steel Flat Bars: ASTM A666, Type 304. Remove tool and die marks and stretch lines, or blend into finish.
- F. Frame Anchors: Same material as door face.
- G. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.6 FABRICATION

- A. General: Provide access door and frame assemblies manufactured as integral units ready for installation.
- B. Metal Surfaces: For metal surfaces exposed to view in the completed Work, provide materials with smooth, flat surfaces without blemishes. Do not use materials with exposed pitting, seam marks, roller marks, rolled trade names, or roughness.
- C. Doors and Frames: Grind exposed welds smooth and flush with adjacent surfaces. Furnish mounting holes, attachment devices and fasteners of type required to secure access doors to types of supports indicated.
- D. Latch and Lock Hardware:
 - 1. Quantity: Furnish number of latches and locks required to hold doors tightly closed.
 - 2. Keys: Furnish two keys per lock and key all locks alike.

2.7 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Painted Finishes: Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.
 - 1. Factory Primed: Apply manufacturer's standard, lead- and chromate-free, universal primer immediately after surface preparation and pretreatment.
- E. Stainless Steel Finishes:
 - 1. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
 - 2. Polished Finish: ASTM A480/A480M No. 4 finish. Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - a. Run grain of directional finishes with long dimension of each piece.
 - b. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Provide access doors and frames in locations as required to access mechanical, plumbing, fire protection, and electrical devices and controls. Install with required clearance(s) for accessing items as required.
 - 1. Install in locations as required for equipment access by authorities having jurisdiction.
- B. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.
- B. Remove and replace access doors and frames that are warped, bowed, or otherwise damaged.

END OF SECTION 08 31 13

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SECTION 08 36 13

SECTIONAL DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes insulated steel sectional-door assemblies at garages.
- B. Related Requirements:
 - 1. Section 05 50 00 "Metal Fabrications" for miscellaneous steel supports.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type and size of sectional door and accessory.
 - 1. Include construction details, material descriptions, dimensions of individual components, profile door sections, and finishes.
 - 2. For power-operated doors, include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. Shop Drawings: For each installation and for components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and mounting details.
 - 2. Include details of equipment assemblies. Indicate dimensions, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include points of attachment and their corresponding static and dynamic loads imposed on structure.
 - 4. Include diagrams for power, signal, and control wiring.
- C. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard size.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranties: For manufacturer's warranty and finish warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sectional doors to include in maintenance manuals.
- B. Manufacturer's warranty.
- C. Finish warranty.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

1.7 WARRANTY

- A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of sectional doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Failure of components or operators before reaching required number of operation cycles.
 - c. Faulty operation of hardware.
 - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use; rust through.
 - e. Delamination of exterior or interior facing materials.
 - 2. Warranty Period: Five years from date of Substantial Completion.
- B. Finish Warranty: Manufacturer agrees to repair or replace components that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS, GENERAL

- A. Source Limitations: Obtain sectional doors from single source from single manufacturer.
 - 1. Obtain operators and controls from sectional door manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Provide sectional doors that comply with performance requirements specified without failure from defective manufacture, fabrication, installation, or other defects in construction.
- B. Structural Performance, Exterior Doors: Capable of withstanding the design wind loads.

1. Design Wind Load: As indicated on Drawings.
2. Testing: In accordance with ASTM E330/E330M or DASMA 108 for garage doors and complying with DASMA 108 acceptance criteria.
3. Deflection Limits: Design sectional doors to withstand design wind loads without evidencing permanent deformation or disengagement of door components.
 - a. Deflection of door sections in horizontal position (open) shall not exceed 1/120 of door width.
 - b. Deflection of horizontal track assembly shall not exceed 1/240 of door height.

2.3 SECTIONAL-DOOR ASSEMBLY

- A. Steel Sectional Door: Provide sectional door formed with hinged sections and fabricated so that finished door assembly is rigid and aligned with tight hairline joints; free of warp, twist, and deformation; and complies with requirements in DASMA 102.
 1. Products: Subject to compliance with requirements, provide the following:
 - a. Haas Door; Insulated Steel 700 Series Doors.
- B. Operation Cycles: Door components and operators capable of operating for not less than 25,000 operation cycles. One operation cycle is complete when door is opened from closed position to the open position and returned to closed position.
- C. Air Infiltration: Maximum rate of 0.4 cfm/sq. ft. when tested in accordance with ASTM E283 or DASMA 105.
- D. Construction:
 1. Sections: Shall be 1-3/4 inches thick roll formed inside and outside, hot-dipped galvanized steel, insulated with high density polyurethane foam.
 2. Thermal Break: Full tongue-and-groove thermal break construction with rigid vinyl extrusions.
 3. Material: Hot-dipped galvanized steel (ASTM A-653).
 - a. Gauge: 26 gauge woodgrain texture exterior and 26 gauge woodgrain texture interior
 4. Exterior Panel Design: As indicated on Drawings.
 5. Interior Design: V-groove on 3 inch centers.
 6. Insulation: Fully insulated section using high density CFC free polyurethane foam, pressure injected to completely fill the section. Calculated R value = 16.18, U value = .062.
 7. End Stiles:
 - a. Steel End Stile: 16 ga. hot-dipped galvanized steel, installed over vinyl end cap to maintain the thermal break.
 8. Intermediate Reinforcing: Nominal 18 gauge full vertical steel back-up plates, inserted prior to foaming, to provide proper position and reinforcing for attachment of various hardware.
 9. Exterior Finish Coat: Two-coat finish 1.0 mil total thickness painting process consisting of a bake-on urethane primer and a baked polyester finish.

- a. Premium Base Color: Mahogany.
10. Interior Finish Coat: Two-coat finish 1.0 mil total thickness painting process consisting of a bake-on urethane primer and a baked polyester finish.
 - a. Color: Polar White.
11. Top Section Design: As indicated on Drawings.
12. Glazed Top Design: As indicated on Drawings.
13. Glazing Types:
 - a. Glass: 1/2 Inch (12 mm) Insulated:
 - 1) Clear Tempered.
- E. Track: Manufacturer's standard, galvanized-steel, standard-lift track system. Provide complete system including brackets, bracing, and reinforcement to ensure rigid support of ball-bearing roller guides.
 1. Material: Galvanized steel, ASTM A653/A653M, minimum G60 zinc coating.
 2. Size: As recommended in writing by manufacturer for door size, weight, track configuration and door clearances indicated on Drawings.
 3. Track Reinforcement and Supports: Provide galvanized-steel members to support track without sag, sway, and vibration during opening and closing of doors. Slot vertical sections of track spaced 2 inches apart for door-drop safety device.
 - a. Vertical Track: Incline vertical track to ensure weathertight closure at jambs. Provide intermittent jamb brackets attached to track and wall.
 - b. Horizontal Track: Provide continuous reinforcing angle from curve in track to end of track, attached to track and supported at points by laterally braced attachments to overhead structural members.
- F. Weatherstripping:
 1. Perimeter Seal: Flexible perimeter seal for jambs and header.
 2. Bottom Seal: Full length vinyl astragal retainer. Weather strip to be "U" shaped flexible extruded vinyl.
- G. Windows: Manufacturer's standard window units of shape and size and in locations indicated on Drawings. Set glazing in vinyl, rubber, or neoprene glazing channel. Provide removable stops of same material as door-section frames. Provide the following glazing:
 1. Insulating Glass Units: Manufacturer's standard.
- H. Hardware:
 1. Hinges and Brackets: Hot-dipped galvanized steel, 14 gauge minimum. Double end hinges are supplied on doors 18 feet and wider.
 2. Lock Device: Interior slide bar lock to be spring loaded, mounted on end stile and shall engage slot in track.
- I. Counterbalance System: Provided with aircraft-type, galvanized steel lifting cables with minimum safety factor of 6. Torsion Springs consisting of heavy-duty oil-tempered wire torsion springs on a continuous ball-bearing cross-header shaft.

- J. Electric Door Operator: Electric door operator assembly of size and capacity recommended by door manufacturer for door and operation cycles specified, with electric motor and factory-prewired motor controls, starter, gear-reduction unit, solenoid-operated brake, clutch, control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
1. Provide Chamberlain 3/4 h.p. belt drive opener with chain hoist gear.
 2. Comply with NFPA 70.
 3. Control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6; with NFPA 70, Class 2 control circuit, maximum 24 V ac or dc.
 4. Safety: Listed in accordance with UL 325 by a qualified testing agency for commercial or industrial use.
 5. Usage Classification: Standard duty, up to 25 cycles per hour and up to 90 cycles per day.
 6. Operator Type: Manufacturer's standard for door requirements.
 7. Limit Switches: Equip motorized door with adjustable switches interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.
 8. Obstruction Detection: Automatic external entrapment protection consisting of automatic safety sensor capable of protecting full width of door opening. Activation of device immediately stops and reverses downward door travel.
 - a. Unmonitored Entrapment Protection: Pneumatic sensor edge, black, located within weatherseal mounted to bottom bar.
 9. Emergency Manual Operation: Chain type designed so required force for door operation does not exceed 25 lbf.
 10. Emergency Operation Disconnect Device: Hand-operated disconnect mechanism for automatically engaging manual operator and releasing brake for emergency manual operation while disconnecting motor without affecting timing of limit switch. Mount mechanism so it is accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
 11. Motor Removal: Design operator so motor can be removed without disturbing limit-switch adjustment and without affecting emergency manual operation.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for substrate construction and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install sectional doors and operating equipment complete with necessary hardware, anchors, inserts, hangers, and equipment supports; in accordance with manufacturer's written instructions.
- B. Tracks:
 1. Fasten vertical track assembly to opening jambs and framing with fasteners spaced not more than 24 inches apart.

2. Hang horizontal track assembly from structural overhead framing with angles or channel hangers attached to framing by welding or bolting, or both. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.

C. Accessibility: Install sectional doors, switches, and controls along accessible routes in compliance with regulatory requirements for accessibility.

D. Power-Operated Doors: Install automatic garage doors openers in accordance with UL 325.

3.3 STARTUP SERVICES

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks in accordance with manufacturer's written instructions.

2. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.

3.4 ADJUSTING

A. Adjust hardware and moving parts to function smoothly so that doors operate easily, free of warp, twist, or distortion.

B. Lubricate bearings and sliding parts as recommended by manufacturer.

C. Adjust doors and seals to provide weather-resistant fit around entire perimeter.

D. Touchup Painting Galvanized Material: Immediately after welding galvanized materials, clean welds and abraded galvanized surfaces and repair galvanizing to comply with ASTM A780/A780M.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain sectional doors.

END OF SECTION 08 36 13

SECTION 08 41 13

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Aluminum-framed storefront systems.
2. Aluminum-framed entrance door systems.

B. Related Requirements:

1. Section 08 71 00 "Door Hardware" for hardware not specified in this Section.
2. Section 08 80 00 "Glazing" for insulating glass units installed in aluminum-framed entrances and storefronts.

1.2 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. For sealants, indicate VOC content in g/L.
3. For products having recycled content, indicate postconsumer and preconsumer recycled content.

B. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.

1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
2. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
3. Include point-to-point wiring diagrams showing the following:
 - a. Power requirements for each electrically operated door hardware.
 - b. Location and types of switches, signal device, conduit sizes, and number and size of wires.

C. Samples for Initial Selection: For units with factory-applied color finishes.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

- E. Delegated Design Submittal: For aluminum-framed entrances and storefronts including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
 - 1. Detail fabrication and assembly of aluminum-framed systems.
 - 2. Include design calculations.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data:
 - 1. For Installer and field testing agency.
 - 2. For professional engineer's experience with providing delegated design engineering services of the kind indicated, including documentation that engineer is licensed in the jurisdiction in which Project is located.
- B. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
 - 1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.
- C. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by a qualified testing agency.
- D. Field quality-control reports.
- E. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and that employs a qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.
- B. Testing Agency Qualifications: Qualified in accordance with ASTM E699 for testing indicated and acceptable to Owner and Architect.
- C. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.7 MOCKUPS

- A. Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - 1. Build mockup of typical wall area as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures, including, but not limited to, excessive deflection.
 - b. Noise or vibration created by wind and thermal and structural movements.
 - c. Deterioration of metals and other materials beyond normal weathering.
 - d. Water penetration through fixed glazing and framing areas.
 - e. Failure of operating components.
 - 2. Warranty Period: 10 years from date of Substantial Completion.
- B. Special Finish Warranty, Factory-Applied Finishes: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Products: Subject to compliance with requirements, provide products indicated in this Section or comparable products by one of the following:
 - 1. EFCO Corporation.
 - 2. Kawneer North America, an Arconic company.
 - 3. YKK AP America Inc.
- B. Source Limitations: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design aluminum-framed entrances and storefronts.
- B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure, including, but not limited to, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.
 - b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- C. Structural Loads:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Other Design Loads: As indicated on Drawings.
- D. Deflection of Framing Members Supporting Glass: At design wind load, as follows:
 - 1. Deflection Normal to Wall Plane: Limited to 1/175 of clear span for spans of up to 13 feet 6 inches and to 1/240 of clear span plus 1/4 inch for spans greater than 13 feet 6 inches.
 - 2. Deflection Parallel to Glazing Plane: Limited to amount not exceeding that which reduces glazing bite to less than 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.
- E. Structural: Test in accordance with ASTM E330/E330M as follows:
 - 1. When tested at positive and negative wind-load design pressures, storefront assemblies, including entrance doors, do not evidence deflection exceeding specified limits.
 - 2. When tested at 150 percent of positive and negative wind-load design pressures, storefront assemblies, including entrance doors and anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 - 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- F. Water Penetration under Static Pressure: Test in accordance with ASTM E331 as follows:
 - 1. No evidence of water penetration through fixed glazing and framing areas, including entrance doors, when tested in accordance with a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
- G. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:
 - 1. Thermal Transmittance (U-factor):

- a. Fixed Glazing and Framing Areas: U-factor for the system of not more than 0.38 Btu/sq. ft. x h x deg F.
 - b. Entrance Doors: U-factor of not more than 0.77 Btu/sq. ft. x h x deg F as determined in accordance with NFRC 100.
2. Solar Heat-Gain Coefficient (SHGC):
- a. Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.40 as determined in accordance with NFRC 200.
 - b. Entrance Doors: SHGC of not more than 0.40 as determined in accordance with NFRC 200.
3. Air Leakage:
- a. Fixed Glazing and Framing Areas: Air leakage for the system of not more than 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft. when tested in accordance with ASTM E283.
 - b. Entrance Doors: Air leakage of not more than 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
- H. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes.
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.3 STOREFRONT SYSTEMS

- A. Basis-of-Design Product: Kawneer North America, an Arconic company; Trifab 451UT Framing System.
- B. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads.
1. Exterior Framing Construction: Thermally broken.
 2. Interior Vestibule Framing Construction: Nonthermal.
 3. Glazing System: Retained mechanically with gaskets on four sides.
 4. Finish: High-performance organic finish.
 5. Fabrication Method: Field-fabricated stick system.
 6. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 7. Internal Steel Reinforcement: As required by manufacturer to meet performance requirements.
- C. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- D. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

2.4 ENTRANCE DOOR SYSTEMS

- A. Basis-of-Design Product: Kawneer North America, an Arconic company; 500 Entrances.

- B. Entrance Doors: Manufacturer's standard glazed entrance doors for manual-swing or automatic operation.
 - 1. Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch- thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded or that incorporate concealed tie rods.
 - 2. Door Design: As indicated on Drawings.
 - 3. Glazing Stops and Gaskets: Beveled, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide nonremovable glazing stops on outside of door.
 - 4. Finish: Match adjacent storefront framing finish.

2.5 GLAZING

- A. Glazing: Comply with Section 08 80 00 "Glazing."
- B. Glazing Gaskets: Manufacturer's standard sealed-corner pressure-glazing system of black, resilient elastomeric glazing gaskets, setting blocks, and shims or spacers.
- C. Glazing Sealants: As recommended by manufacturer.
 - 1. Verify sealant has a VOC content of 250 g/L or less.

2.6 MATERIALS

- A. Sheet and Plate: ASTM B209.
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.
- C. Structural Profiles: ASTM B308/B308M.
- D. Internal Steel Reinforcement:
 - 1. Structural Shapes, Plates, and Bars: ASTM A36/A36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A1008/A1008M.
 - 3. Hot-Rolled Sheet and Strip: ASTM A1011/A1011M.
- E. Steel Reinforcement Primer: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods in accordance with recommendations in SSPC-SP COM, and prepare surfaces in accordance with applicable SSPC standard.
- F. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- G. Recycled Content of Aluminum Components: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.7 ACCESSORIES

- A. Automatic Door Operators: Section 08 71 13 "Automatic Door Operators."
- B. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
- C. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch that accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
 - 1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A123/A123M or ASTM A153/A153M requirements.
- D. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.
- E. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.
- F. Rigid PVC filler.

2.8 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.
 - 3. Physical and thermal isolation of glazing from framing members.
 - 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 - 5. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
 - 1. At interior and exterior doors, provide compression weather stripping at fixed stops.
- F. Entrance Doors: Reinforce doors as required for installing entrance door hardware.

1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
 2. At exterior doors, provide weather sweeps applied to door bottoms.
- G. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- H. After fabrication, clearly mark components to identify their locations in Project in accordance with Shop Drawings.

2.9 ALUMINUM FINISHES

- A. High-Performance Organic Finish, Two-Coat PVDF: Fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat.
1. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 2. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

- A. Comply with manufacturer's written instructions.
- B. Do not install damaged components.
- C. Fit joints to produce hairline joints free of burrs and distortion.
- D. Rigidly secure nonmovement joints.
- E. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
- F. Seal perimeter and other joints watertight unless otherwise indicated.
- G. Metal Protection:
1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
 2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

- H. Install components to drain water passing joints, condensation occurring within framing members, and moisture migrating within the system to exterior.
- I. Set continuous sill members and flashing in full sealant bed, as specified in Section 07 92 00 "Joint Sealants," to produce weathertight installation.
- J. Install joint filler behind sealant as recommended by sealant manufacturer.
- K. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF GLAZING

- A. Install glazing as specified in Section 08 80 00 "Glazing."

3.4 INSTALLATION OF ALUMINUM-FRAMED ENTRANCE DOORS

- A. Install entrance doors to produce smooth operation and tight fit at contact points.
 - 1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
 - 2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware in accordance with entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.5 ERECTION TOLERANCES

- A. Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:
 - 1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
 - 2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
 - 3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
 - c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
 - 4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Field Quality-Control Testing: Perform the following test on representative areas of aluminum-framed entrances and storefronts.
 - 1. Water-Spray Test: Before installation of interior finishes has begun, areas designated by Architect shall be tested in accordance with AAMA 501.2 and shall not evidence water penetration.

- a. Perform a minimum of three tests in areas as directed by Architect.
2. Air Leakage: ASTM E783 at 1.5 times the rate specified for laboratory testing in "Performance Requirements" Article but not more than 0.09 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 - a. Perform a minimum of three tests in areas as directed by Architect.
- C. Aluminum-framed entrances and storefronts will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

END OF SECTION 08 41 13

SECTION 08 54 00

COMPOSITE WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes composite-framed windows.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 2. Review, discuss, and coordinate the interrelationship of composite windows with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
 - 3. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
 - 4. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, glazing and fabrication methods, dimensions of individual components and profiles, hardware, and finishes for composite windows.
- B. Shop Drawings: For composite windows.
 - 1. Include plans, elevations, sections, hardware, accessories, insect screens, operational clearances, and details of installation, including anchor, flashing, and sealant installation.
- C. Samples for Initial Selection: For units with factory-applied finishes.
 - 1. Include Samples of hardware and accessories involving color selection.
- D. Samples for Verification: For composite windows and components required, prepared on Samples of size indicated below:
 - 1. Exposed Finishes: 2 by 4 inches.

2. Exposed Hardware: Full-size units.

E. Product Schedule: For composite windows. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

B. Product Test Reports: For each type of composite window, for tests performed by a qualified testing agency.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's warranties.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating composite windows that meet or exceed performance requirements indicated and of documenting this performance by test reports and calculations.

B. Installer Qualifications: An installer acceptable to composite window manufacturer for installation of units required for this Project.

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.

1. Include window in exterior mockup as indicated on Drawings.

2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace composite windows that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

- a. Failure to meet performance requirements.
- b. Structural failures including excessive deflection, water leakage, and air infiltration.
- c. Faulty operation of movable sash and hardware.
- d. Deterioration of materials and finishes beyond normal weathering.
- e. Failure of insulating glass.

2. Warranty Period:

- a. Window: 10 years from date of Substantial Completion.
- b. Glazing Units: 20 years from date of Substantial Completion.
- c. Color Fade: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain composite windows from single source from single manufacturer.

2.2 WINDOW PERFORMANCE REQUIREMENTS

- A. Product Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
 - 1. Window Certification: WDMA certified with label attached to each window.
- B. Performance Class and Grade: AAMA/WDMA/CSA 101/I.S.2/A440 as follows:
 - 1. Minimum Performance Class: LC.
 - 2. Minimum Performance Grade: 30.
- C. Thermal Transmittance: NFRC 100 maximum whole-window U-factor of 0.30 Btu/sq. ft. x h x deg F.
- D. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum whole-window SHGC of 0.28.

2.3 COMPOSITE WINDOWS

- A. Products: Subject to compliance with requirements, provide the following:
 - 1. Andersen Windows; Andersen Corporation; 100 Series Windows.
- B. Operating Types: Provide the following operating types in locations indicated on Drawings:
 - 1. Single hung.
 - 2. Fixed.
- C. Material Composition: Extruded composite profile consisting of 40 percent reclaim=med re-consumer wood fiber and 60 percent thermoplastic polymer, by weight.
 - 1. Exterior Color: As selected by Architect from manufacturer's standard range.
 - 2. Interior Color: As selected by Architect from manufacturer's standard range.
 - 3. Exterior Color Retention: Resist fading with a change of no more than 5 Delta E units over 10 years in compliance with color retention provisions of AAMA 615 and ASTM D2244.
 - 4. Gypsum Board Returns: Provide at interior face of frame.
 - 5. Fabricate window frames with minimum 1-3/4 inch long nailing/flashing fins.
 - 6. Provide senior lift rail at operating sashes.
- D. Insulating-Glass Units: ASTM E2190.
 - 1. Glass: ASTM C1036, Type 1, Class 1, q3.
 - a. Tint: Clear.
 - b. Kind: Fully tempered where indicated on Drawings.

2. Lites: Two.
 3. Filling: Fill space between glass lites with argon.
 4. Low-E Coating: Sputtered on second surface.
- E. Glazing System: Manufacturer's standard factory-glazing system that produces weathertight seal.
- F. Hardware, General: Provide manufacturer's standard hardware fabricated from aluminum, stainless steel, carbon steel complying with AAMA 907, or other corrosion-resistant material compatible with adjacent materials; designed to smoothly operate, tightly close, and securely lock windows, and sized to accommodate sash weight and dimensions.
1. Provide operating hardware at accessible locations within fully accessible apartments.
 2. Exposed Hardware Color and Finish: As selected by Architect from manufacturer's full range.
- G. Hung Window Hardware:
1. Counterbalancing Mechanism: Complying with AAMA 902, concealed, of size and capacity to hold sash stationary at any open position.
 2. Locks and Latches: Allow unobstructed movement of the sash across adjacent sash in direction indicated and operated from the inside only.
 3. Tilt Hardware: Releasing tilt latch allows sash to pivot about horizontal axis to facilitate cleaning exterior surfaces from the interior.
 4. Limit Devices: Manufacturer's standard limit devices designed to restrict sash opening.
 - a. Limit clear opening to 4 inches for ventilation.
- H. Weather Stripping: Provide full-perimeter weather stripping for each operable sash unless otherwise indicated.
- I. Fasteners: Noncorrosive and compatible with window members, trim, hardware, anchors, and other components.
1. Exposed Fasteners: Do not use exposed fasteners to greatest extent possible. For application of hardware, use fasteners that match finish hardware being fastened.

2.4 ACCESSORIES

- A. Dividers (False Muntins): Provide divider grilles in designs indicated for each sash lite.
1. Quantity and Type: One permanently located between insulating-glass lites.
 2. Material: Manufacturer's standard.
 3. Pattern: As indicated on Drawings.
 4. Profile: As selected by Architect from manufacturer's full range.
 5. Color: As selected by Architect from manufacturer's full range.

2.5 INSECT SCREENS

- A. General: Fabricate insect screens to integrate with window frame. Provide screen for each operable exterior sash. Screen wickets are not permitted.
1. Type and Location: Half, outside for single-hung sashes.

- B. Aluminum Frames: Manufacturer's standard aluminum alloy complying with SMA 1004 or SMA 1201. Fabricate frames with mitered or coped joints or corner extrusions, concealed fasteners, and removable PVC spline/anchor concealing edge of frame.
 - 1. Tubular Framing Sections and Cross Braces: Roll formed from aluminum sheet.
 - 2. Finish for Exterior Screens: Baked-on organic coating matching color and finish of window.
- C. Glass-Fiber Mesh Fabric: 18-by-14 or 18-by-16 mesh of PVC-coated, glass-fiber threads; woven and fused to form a fabric mesh resistant to corrosion, shrinkage, stretch, impact damage, and weather deterioration. Comply with ASTM D3656/D3656M.
 - 1. Mesh Color: Charcoal gray.

2.6 FABRICATION

- A. Fabricate composite windows in sizes indicated. Include a complete system for installing and anchoring windows.
- B. Glaze composite windows in the factory.
- C. Weather strip each operable sash to provide weathertight installation.
- D. Mullions: Provide mullions and cover plates, compatible with window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections. Provide mullions and cover plates capable of withstanding design wind loads of window units. Provide manufacturer's standard finish to match window units.
- E. Hardware: Mount hardware through double walls of composite extrusions or provide corrosion-resistant reinforcement.
- F. Complete fabrication, assembly, finishing, hardware application, and other work in the factory to greatest extent possible. Disassemble components only as necessary for shipment and installation. Allow for scribing, trimming, and fitting at Project site.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine openings, substrates, structural support, anchorage, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Verify rough opening dimensions, levelness of sill plate, and operational clearances.
- C. Examine wall flashings, vapor retarders, water and weather barriers, and other built-in components to ensure weathertight window installation.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing windows, hardware, accessories, and other components. For installation procedures and requirements not addressed in manufacturer's written instructions, comply with installation requirements in ASTM E2112.
- B. Install windows level, plumb, square, true to line, without distortion, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction to produce weathertight construction.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
 - 1. Testing and inspecting agency will interpret tests and state in each report whether tested work complies with or deviates from requirements.
- B. Testing Services: Testing and inspecting of installed windows shall take place as follows:
 - 1. Testing Methodology: Testing of windows for air infiltration and water resistance shall be performed according to AAMA 502.
 - 2. Air-Infiltration Testing:
 - a. Test Pressure: That required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance class indicated.
 - b. Allowable Air-Leakage Rate: 1.5 times the applicable AAMA/WDMA/CSA 101/I.S.2/A440 rate for product type and performance class rounded down to one decimal place.
 - 3. Water-Resistance Testing:
 - a. Test Pressure: Two-thirds times test pressure required to determine compliance with AAMA/WDMA/CSA 101/I.S.2/A440 performance grade indicated.
 - b. Allowable Water Infiltration: No water penetration.
 - 4. Testing Extent: Three windows of each type as selected by Architect and a qualified independent testing and inspecting agency. Windows shall be tested after perimeter sealants have cured.
 - 5. Test Reports: Prepared according to AAMA 502.
- C. Windows will be considered defective if they do not pass tests and inspections. Remove, replace, and retest as specified above.
- D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced windows or additional work with specified requirements.
- E. Prepare test and inspection reports.

3.4 ADJUSTING, CLEANING, AND PROTECTION

- A. Adjust operating sashes and hardware for a tight fit at contact points and weather stripping for smooth operation and weathertight closure.

- B. Clean exposed surfaces immediately after installing windows. Remove excess sealants, glazing materials, dirt, and other substances.
 - 1. Keep protective films and coverings in place until final cleaning.
- C. Remove and replace sashes if glass has been broken, chipped, cracked, abraded, or damaged during construction period.
- D. Protect window surfaces from contact with contaminating substances resulting from construction operations. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written instructions.

END OF SECTION 08 54 00

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SECTION 08 71 01

DOOR HARDWARE - INDEPENDENT LIVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section references specification sections relating to commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding Doors.
 - 3. Other doors to the extent indicated.
- B. Commercial door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical and access control door hardware.
 - 3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
 - 4. Automatic operators.
 - 5. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Integrated Door Opening Assemblies".
 - 2. Division 08 Section "Door Hardware".
 - 3. Division 08 Section "Automatic Door Operators".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Refer to "PART 3 – EXECUTION" for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

- A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 1. Quantities listed are for each pair of doors, or for each single door.
 2. The supplier is responsible for handling and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.
1. Section 08 17 00 – Integrated Door Opening Assemblies.
 2. Section 08 71 00 – Door Hardware.
 3. Section 28 15 15.11 – Card Key Access Control Hardware..
- C. Manufacturer's Abbreviations:
1. MK - McKinney
 2. PE - Pemko
 3. MR - Markar
 4. SU - Securitron
 5. RO - Rockwood
 6. SA - SARGENT
 7. VI - ASSA ABLOY Hospitality
 8. ET - Emtek
 9. TC - Trimco
 10. RI - RITE Door
 11. BE - dormakaba Best
 12. HS - HES
 13. RF - Rixson
 14. NO - Norton
 15. OT - Other

Hardware Sets

Set: 1.0

Doors: EG102-E

2 Continuous Hinge	CFM__SLF-HD1		PE	087100	
2 Push Bar & Pull	BF15747	US32D	RO	087100	
2 Automatic Opener	6331	689	NO	087100	↗
1 Threshold	253x3AFG MSES25SS		PE	087100	
2 Wave Wall Switch	700		NO	087100	↗
2 Position Switch	DPS-M-GY		SU	087100	↗

Set: 2.0

Doors: [ES1-1-E](#), [ES3-1-E](#), [WS1-1-E](#), [WS3-1-E](#)

1 Continuous Hinge	CFM__HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT		SU	087100	↘
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D	SA	087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Surface Closer	281 CPS	EN	SA	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100	↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)		MK	087100	↘
1 Remote Reader	VingCard		VI	281515.11	
1 Position Switch	DPS-M-GY		SU	087100	↘
1 Power Supply	VingCard		VI	281515.11	↘

Notes: Operational Narrative by Specification Section 281515.11.

Set: 3.0

Doors: [EG100-A-E](#), [EG100-B-E](#), [ES2-1-E](#), [WG100-A-E](#), [WG100-B-E](#)

1 Continuous Hinge	CFM__HD1		PE	087100	
1 Exit Device - VingCard	K7100	US32D	VI	281515.11	
1 VingCard Exit Device Trim	4G RFID Jeily 6464	US26D	VI	281515.11	
1 Surface Closer	281 CPS	EN	SA	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 Position Switch	DPS-M-GY		SU	087100	↘

Set: 4.0

Doors: [E131-E](#), [W137-E](#)

1 Continuous Hinge	CFM__HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT		SU	087100	↘
1 Storeroom/Closet Lock	RX 72 8204 COMV	US26D	SA	087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Electric Strike	1006 x Faceplate as Required	630	HS	087100	↘
1 Conc Overhead Stop	1-X36	630	RF	087100	
1 Automatic Opener	6331	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	

1 ElectroLynx Harness - Frame	QC-C1500P	MK	087100	↗
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)	MK	087100	↗
1 Remote Reader	VingCard	VI	281515.11	
1 Position Switch	DPS-M-GY	SU	087100	↗
1 Power Supply	VingCard	VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 5.0

Doors: W140-B-E

1 Continuous Hinge	CFM__HD1	PE	087100	
1 Rim Exit Device, Storeroom	16 43 72 8804 ETMV	US32D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	281 CPS	EN	SA	087100
1 Threshold	253x3AFG MSES25SS		PE	087100
1 Gasketing	290APK x 2891APK		PE	087100
1 Sweep	18061CNB		PE	087100
1 Position Switch	DPS-M-GY	SU	087100	↗

Set: 6.0

Doors: EG102, EG107, WG101

1 Continuous Hinge	CFM__SLF-HD1	PE	087100	
1 Magnetic Lock	M680EBD	630	SU	087100 ↗
1 Push Bar & Pull	BF15747	US32D	RO	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Automatic Opener	6311	689	NO	087100 ↗
1 Wave Wall Switch	700		NO	087100 ↗
1 Remote Reader	VingCard	VI	281515.11	
1 Motion Sensor	XMS	SU	087100	↗
1 Push Button	EEB2	SU	087100	↗
1 Power Supply	VingCard	VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 7.0

Doors: E140-A, ES1-0, ES3-0, W140-A, WS1-0, WS2-0

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Magnetic Lock	M680EBD	630	SU	087100 ↗

1 Rim Exit Device, Passage	12 43 8815 ETMV	US32D	SA	087100	
1 Automatic Opener	6311	689	NO	087100	↘
1 Door Stop	400 / 441CU	US26D	RO	087100	
1 Gasketing	S773BL		PE	087100	
1 Wave Wall Switch	700		NO	087100	↘
1 Remote Reader	VingCard		VI	281515.11	
1 Motion Sensor	XMS		SU	087100	↘
1 Push Button	EEB2		SU	087100	↘
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 8.0

Doors: [ES1-1](#), [ES1-2](#), [ES1-3](#), [ES1-4](#), [ES2-1](#), [ES2-2](#), [ES2-3](#), [ES2-4](#), [ES3-1](#), [ES3-2](#), [ES3-3](#), [ES3-4](#), [WS1-1](#), [WS1-2](#), [WS1-3](#), [WS1-4](#), [WS2-1](#), [WS2-2](#), [WS2-3](#), [WS2-4](#)

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Rim Exit Device, Passage	12 43 8815 ETMV	US32D	SA	087100	
1 Surface Closer	351 UO	EN	SA	087100	
1 Door Stop	400 / 441CU	US26D	RO	087100	
1 Gasketing	S773BL		PE	087100	

Set: 9.0

Doors: [EG101](#), [EG103](#), [EG105](#), [WG103](#), [WG105](#)

6 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Dust Proof Strike	570	US26D	RO	087100	
2 Flush Bolt	555	US26D	RO	087100	
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100	
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
2 Conc Overhead Stop	1-X36	630	RF	087100	
2 Silencer	608 / 609		RO	087100	

Set: 10.0

Doors: [EG104](#), [WG102](#)

6 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Dust Proof Strike	570	US26D	RO	087100	
2 Flush Bolt	555	US26D	RO	087100	
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100	
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Conc Overhead Stop	1-X36	630	RF	087100	

1 Surface Closer	351 PS	EN	SA	087100
1 Gasketing	S773BL		PE	087100
1 Astragal	S772BL		PE	087100

Set: 11.0

Doors: E239, E339, E449

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Conc Overhead Stop	1-X36	630	RF	087100
3 Silencer	608 / 609		RO	087100

Set: 12.0

Doors: E132, E232, E332, E432, E438, W241, W341, W441

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Conc Overhead Stop	1-X36	630	RF	087100
3 Silencer	608 / 609		RO	087100

Set: 13.0

Doors: E137, E237, E337, E437, W142, W242, W342, W442

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 14.0

Doors: E238, E338

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Conc Overhead Stop	1-X36	630	RF	087100
3 Silencer	608 / 609		RO	087100

Set: 15.0

Doors: E136, E236, E336, E436, W132, W133, W135, W136, W232, W233, W235, W236, W240, W332, W333, W335, W336, W340, W432, W433, W435, W436, W440

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
3 Silencer	608 / 609		RO	087100

Set: 16.0

Doors: E134, E234, E334, E434, W138, W238, W338, W438

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Privacy Lock	V21 8265 COMV	US26D	SA	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 17.0

Doors: E240, E340, E440, E500, E501, E502, E503, E504, E505, W131, W331, W431, W500, W501, W502, W503, W504, W505

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Passage Latch	8215 COMV	US26D	SA	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 18.0

Doors: E133, E233, E333, E433, W139, W239, W339, W439

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Passage Latch	8215 COMV	US26D	SA	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100
1 Door Bottom	420APKL		PE	087100

Set: 19.0

Doors: W134, W234, W334, W434

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 VingCard Lock	Signature	US26D	VI	281515.11
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 20.0

Doors: E108, E208, E308, E408

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 VingCard Lock	Signature	US26D	VI	281515.11
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Conc Overhead Stop	1-X36	630	RF	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Gasketing	S773BL		PE	087100

Set: 21.0

Doors: U01

3 Hinge (spring)	1502 4-1/2" x 4-1/2"	US10B	MK	087100
1 VingCard Lock	Essence	US26D x US10B	VI	281515.11
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Door Stop	400 / 441CU	US10B	RO	087100
1 Gasketing	S773BL		PE	087100
1 Privacy Latch	PDL	US10B	PE	087100
1 Viewer	624	CRM	RO	087100

Set: 22.0

Doors: U15, U17

3 Hinge, Full Mortise	TA2314	US10B	MK	087100
1 Deadbolt	72 485	US10B	SA	087100
1 Passage Latch	8100 - Cortina Lever x Regular Rose	US10B	ET	087100
1 Permanent Core	Compatible with Facility's Existing System	606	BE	087100
1 Door Stop	400 / 441CU	US10B	RO	087100
1 Threshold	271D		PE	087100
1 Gasketing	S773BL		PE	087100

Set: 23.0

Doors: U02, U03

3 Hinge, Full Mortise	T2714	US10B	MK	087100
1 Privacy Lock	8200 - Cortina Lever x Regular Rose	US10B	ET	087100
3 Silencer	608 / 609		RO	087100
1 HInge Stop	DoorSaver 3	US10B	OT	087100

Set: 24.0

Doors: U11, U12, U13, U14

6 Hinge, Full Mortise	T2714	US10B	MK	087100
2 Roller Latch	592	US10B	RO	087100
2 Dummy Trim	8521 - Cortina Lever x Regular Rose	US10B	ET	087100
2 Silencer	608 / 609		RO	087100
2 HInge Stop	DoorSaver 3	US10B	OT	087100

Set: 25.0

Doors: 1272

3 Hinge, Full Mortise	T2714	US10B	MK	087100
1 Roller Latch	592	US10B	RO	087100
1 Dummy Trim	8521 - Cortina Lever x Regular Rose	US10B	ET	087100
3 Silencer	608 / 609		RO	087100
1 HInge Stop	DoorSaver 3	US10B	OT	087100

Set: 26.0

Doors: U05, U06, U07, U08, U10

3 Hinge, Full Mortise	T2714	US10B	MK	087100
1 Passage Latch	8100 - Cortina Lever x Regular Rose	US10B	ET	087100
3 Silencer	608 / 609		RO	087100
1 HInge Stop	DoorSaver 3	US10B	OT	087100

Set: 27.0

Doors: U04

1 Sliding Door Hdwe	PF28200A		PE	087100
1 Pocket Door Latch	1074-1 x lever as selected by architect	612	TC	087100

Set: 28.0

Doors: WG100-5

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Cylinder	As Required x Temp Core	US32D	SA	087100

Notes: Balance of hardware by assembly manufacturer.

END OF SECTION 08 71 01

SECTION 08 71 02

DOOR HARDWARE - ASSISTED LIVING/MEMORY CARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section references specification sections relating to commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding Doors.
 - 3. Other doors to the extent indicated.
- B. Commercial door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical and access control door hardware.
 - 3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
 - 4. Automatic operators.
 - 5. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Door Hardware".
 - 2. Division 08 Section "Automatic Door Operators".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Refer to "PART 3 – EXECUTION" for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

- A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handling and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
- B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.
1. Section 08 71 00 – Door Hardware.
 2. Section 28 15 15.11 – Card Key Access Control Hardware.
- C. Manufacturer's Abbreviations:
1. MK - McKinney
 2. PE - Pemko
 3. RO - Rockwood
 4. SA - SARGENT
 5. TC - Trimco
 6. VI - ASSA ABLOY Hospitality
 7. ET - Emtek
 8. SU - Securitron
 9. BE - dormakaba Best
 10. HS - HES
 11. RF - Rixson
 12. NO - Norton
 13. OT - Other

Hardware Sets

Set: 1.0

Doors: 1033A, 1033E

1 Continuous Hinge	CFM__SLF-HD1		PE	087100	
1 Magnetic Lock	M680EBD	630	SU	087100	↗
1 Push Bar & Pull	BF15747	US32D	RO	087100	
1 Surface Closer	281 CPS	EN	SA	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
2 Remote Reader Reader	VingCard		VI	281515.11	
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 2.0

Doors: 1000, 1001, 1018A, 1018B, 1033C

2 Continuous Hinge	CFM__HD1		PE	087100	
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2 Magnetic Lock	M680EBD	630	SU	087100	↘
2 Push Bar & Pull	BF15747	US32D	RO	087100	
2 Automatic Opener	6331	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Remote Reader Reader	VingCard		VI	281515.11	
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 3.0

Doors: [1033B](#), [1033F](#)

1 Continuous Hinge	CFM__HD1		PE	087100	
1 Magnetic Lock	M680EBD	630	SU	087100	↘
1 Push Bar & Pull	BF15747	US32D	RO	087100	
1 Automatic Opener	6331	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
2 Remote Reader Reader	VingCard		VI	281515.11	
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 4.0

Doors: [ST-1B](#), [ST-2A](#)

1 Continuous Hinge	CFM__HD1		PE	087100	
1 Rim Exit Device, Storeroom	16 43 72 8804 ETMV	US32D	SA	087100	
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Surface Closer	281 CPS	EN	SA	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	

Set: 5.0

Doors: [S128A](#)

1 Continuous Hinge	CFM__SLF-HD1		PE	087100	
1 Magnetic Lock	M680EBD	630	SU	087100	↘
1 Push Bar & Pull	BF15747	US32D	RO	087100	
1 Surface Closer	281 UO	EN	SA	087100	
1 Door Stop	400 / 441CU	US26D	RO	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	

3 Silencer	608 / 609	RO	087100
2 Remote Reader Reader	VingCard	VI	281515.11
1 Power Supply	VingCard	VI	281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 6.0

Doors: [S128B](#)

1 Continuous Hinge	CFM__SLF-HD1	PE	087100
1 Magnetic Lock	M680EBD	630 SU	087100 ↗
1 Push Bar & Pull	BF15747	US32D RO	087100
1 Surface Closer	281 CPS	EN SA	087100
1 Threshold	253x3AFG MSES25SS	PE	087100
1 Sweep	18061CNB	PE	087100
3 Silencer	608 / 609	RO	087100
2 Remote Reader Reader	VingCard	VI	281515.11
1 Power Supply	VingCard	VI	281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 7.0

Doors: [232A](#), [232B](#), [235A](#), [235B](#)

1 Continuous Hinge	CFM__HD1	PE	087100
1 Storeroom Lock	72 8204 COMV	US26D SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100
1 Conc Overhead Stop	1-X36	630 RF	087100
1 Surface Closer	281 UO	EN SA	087100
1 Threshold	253x3AFG MSES25SS	PE	087100
1 Sweep	18061CNB	PE	087100

Set: 7.1

Doors: [1037B](#)

2 Continuous Hinge	CFM__HD1	PE	087100
1 Dust Proof Strike	570	US26D RO	087100
2 Flush Bolt	555	US26D RO	087100
1 Storeroom Lock	72 8204 COMV	US26D SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100
1 Conc Overhead Stop	1-X36	630 RF	087100
1 Surface Closer	281 CPS	EN SA	087100

1 Threshold	253x3AFG MSES25SS		PE	087100
2 Sweep	18061CNB		PE	087100
2 Astragal	18041CNB		PE	087100

Set: 8.0

Doors: 233, 234

1 Continuous Hinge	CFM__HD1		PE	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	281 CPS	EN	SA	087100
1 Threshold	253x3AFG MSES25SS		PE	087100
1 Sweep	18061CNB		PE	087100

Set: 9.0

Doors: 1000A

1 Continuous Hinge	CFM__HD1		PE	087100
1 Magnetic Lock	M680EBD	630	SU	087100 ↗
1 Push Bar & Pull	BF15747	US32D	RO	087100
1 Automatic Opener	6331	689	NO	087100 ↗
2 Remote Reader Reader	VingCard		VI	281515.11
1 Power Supply	VingCard		VI	281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 10.0

Doors: 1024A, ST-1A, ST-2B

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D	MK	087100
1 Magnetic Lock	M680EBD	630	SU	087100 ↗
1 Rim Exit Device, Passage	12 43 8815 ETMV	US32D	SA	087100
1 Surface Closer	281 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100
2 Remote Reader Reader	VingCard		VI	281515.11
1 Power Supply	VingCard		VI	281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 11.0

Doors: ST-1, ST-2

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Rim Exit Device, Passage	12 43 8815 ETMV	US32D	SA	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 11.1

Doors: C301

6 Hinge, Full Mortise	TA2714	US26D	MK	087100
2 Surface Vert Rod Exit, Exit Only	12 NB8710 EO	US32D	SA	087100
2 Surface Closer	351 UO	EN	SA	087100
2 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100
1 Astragal	S772BL		PE	087100

Set: 11.2

Doors: 1001P

2 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Hinge, Full Mortise	TA2714 QC	US26D	MK	087100 ↗
1 Rim Exit Device, Passage	12 43 56 8815 ETMV	US32D	SA	087100 ↗
1 Automatic Opener	6331	689	NO	087100 ↗
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100 ↗
1 ElectroLynx Harness - Door	QC-CXXX (Size as Required)		MK	087100 ↗
1 Power Supply	AQL Series (Amps & Relays as Required)		SU	087100 ↗

Set: 12.0

Doors: 1033D, 1033J

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Push Pull	111x73C/73CL	US32D	RO	087100
1 Automatic Opener	6311	689	NO	087100 ↗
1 Door Stop	400 / 441CU	US26D	RO	087100
3 Silencer	608 / 609		RO	087100

Set: 13.0

Doors: N2014, N2016, S2014, S2016

6 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Dust Proof Strike	570	US26D	RO	087100
2 Flush Bolt	555	US26D	RO	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
2 Surf Overhead Stop	9-X36	630	RF	087100
1 Surface Closer	351 PS	EN	SA	087100
1 Gasketing	S773BL		PE	087100
1 Astragal	S772BL		PE	087100

Set: 13.1

Doors: 1004

6 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Dust Proof Strike	570	US26D	RO	087100
1 Self Latch Flush Bolt Set	2845 / 2945 (as required)	US26D	RO	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Coordinator	2600 Series x Wear Plates & Mtg. Plates as Required	Black	RO	087100
2 Surf Overhead Stop	9-X36	630	RF	087100
2 Surface Closer	351 UO	EN	SA	087100
1 Gasketing	S773BL		PE	087100
1 Astragal	S772BL		PE	087100

Set: 14.0

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
3 Silencer	608 / 609		RO	087100

Set: 15.0

Doors: 1022, 1027

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	351 PS	EN	SA	087100

3 Silencer 608 / 609 RO 087100

Set: 16.0

Doors: 1009, 1010B, 1011, 1012, 1017, 1026, N113, N118, N2010, N2011, N2017, S117, S119, S130, S2006, S2010, S2011, S2017

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Storeroom Lock 72 8204 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Surface Closer 351 UO EN SA 087100
1 Door Stop 400 / 441CU US26D RO 087100
1 Gasketing S773BL PE 087100

Set: 17.0

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Office Lock 72 8205 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Surface Closer 351 UO EN SA 087100
1 Door Stop 400 / 441CU US26D RO 087100
1 Gasketing S773BL PE 087100

Set: 18.0

Doors: 1005, 1007, 1008, 1010A, 1030, 1032

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Office Lock 72 8205 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Surface Closer 351 UO EN SA 087100
1 Door Stop 400 / 441CU US26D RO 087100
1 Gasketing S773BL PE 087100

Set: 19.0

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Classroom Lock 72 8237 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Door Stop 400 / 441CU US26D RO 087100
3 Silencer 608 / 609 RO 087100

Set: 20.0

Doors: 1020, 1021, 1023, 1028, 1031-B, 1036, N124A, N128, N2006, N2013, S2012

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Classroom Lock	72 8237 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 21.0

Doors: 1031, 1034, N2004, S2004

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Classroom Lock	72 8237 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Electric Strike	1600-CLB	630	HS	087100 ↗
1 Automatic Opener	6311	689	NO	087100 ↗
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100
1 Wave Wall Switch	700		NO	087100 ↗

Set: 22.0

Doors: 1035

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Privacy Lock	V21 8265 COMV	US26D	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
3 Silencer	608 / 609		RO	087100

Set: 23.0

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Privacy Lock	V21 8265 COMV	US26D	SA	087100
1 Concealed Overhead Stop	2-X36	630	RF	087100
3 Silencer	608 / 609		RO	087100

Set: 24.0

Doors: N122, S123

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
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1 Privacy Lock	V21 8265 COMV	US26D	SA	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 24.1

Doors: N2007, S2007

2 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Hinge, Full Mortise	TA2714 QC	US26D	MK	087100 ↘
1 Electrified Mortise Lock	V21 PHR NAC-82281-24v COMV	US26D	SA	087100 ↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Electric Strike	1600-CLB	630	HS	087100 ↘
1 Automatic Opener	6311	689	NO	087100 ↘
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100 ↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as Required)		MK	087100 ↘
1 Wiring Diagram	WD-SYSPK		SA	087100
1 Wave Wall Switch	700		NO	087100 ↘
1 Power Supply	AQL Series (Amps & Relays as Required)		SU	087100 ↘

Notes: Inside, when deadbolt it projected operator paddle is deactivated. Operating inside trim retracts both latchbolt & deadbolt & reactivates outside operator paddle,

Set: 25.0

Doors: 1009A

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Privacy Lock	V21 8265 COMV	US26D	SA	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 26.0

Doors: 1013

6 Hinge, Full Mortise	TA2714	US26D	MK	087100
2 Push Pull	111x73C/73CL	US32D	RO	087100
2 Conc Overhead Hold Open	1-326	630	RF	087100

2 Silencer 608 / 609 RO 087100

Set: 26.1

Doors: 1037A, S2021

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Passage Latch	8215 COMV	US26D	SA	087100	
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Electric Strike	1600-CLB	630	HS	087100	↗
1 Automatic Opener	6311	689	NO	087100	↗
1 Door Stop	400 / 441CU	US26D	RO	087100	
1 Gasketing	S773BL		PE	087100	
1 Sweep	18061CNB		PE	087100	
2 Wave Wall Switch	700		NO	087100	↗

Set: 27.0

Doors: 1006, 1009B, 1014B, N2008, N2012, S125, S125A, S129, S2008

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 VingCard Lock	Signature	US26D	VI	281515.11	
1 Surface Closer	351 UO	EN	SA	087100	
1 Door Stop	400 / 441CU	US26D	RO	087100	
1 Gasketing	S773BL		PE	087100	

Set: 28.0

Doors: N119, N124, S120, S2013

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 VingCard Lock	Signature	US26D	VI	281515.11	
1 Conc Overhead Stop	1-X36	630	RF	087100	
1 Surface Closer	351 UO	EN	SA	087100	
1 Gasketing	S773BL		PE	087100	

Set: 28.1

Doors: 1014A

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 VingCard Lock	Signature	US26D	VI	281515.11	
1 Surf Overhead Stop	9-X36	630	RF	087100	
1 Surface Closer	351 UO	EN	SA	087100	
1 Gasketing	S773BL		PE	087100	

Set: 29.0

Doors: U01

3 Hinge (spring)	1502 4-1/2" x 4-1/2"	US10B	MK	087100
1 Passage Latch	28 7U15 LG	US26D X US10B	SA	087100
1 Door Stop	400 / 441CU	US10B	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 30.0

Doors: U03

3 Hinge, Full Mortise	T2714	US10B	MK	087100
1 Privacy Lock	8200 - Cortina Lever x Regular Rose	US10B	ET	087100
3 Silencer	608 / 609		RO	087100
1 HInge Stop	DoorSaver 3	US10B	OT	087100

Set: 31.0

Doors: U02

3 Hinge, Full Mortise	T2714	US10B	MK	087100
1 Roller Latch	592	US10B	RO	087100
1 Dummy Trim	8521 - Cortina Lever x Regular Rose	US10B	ET	087100
3 Silencer	608 / 609		RO	087100
1 HInge Stop	DoorSaver 3	US10B	OT	087100

Set: 32.0

Doors: U04

1 Sliding Door Hdwe	PF28200A		PE	087100
1 Pocket Door Latch	1074-1 Bellini	613E X 629	TC	087100

Set: 33.0

Doors: 1034A, 1034B

1 Sliding Door Hdwe	PF28200A		PE	087100
1 Pocket Door Latch	1074-1 Bellini	630	TC	087100

Set: 34.0

Doors: 1001A, 1001B, 1037L, 1037M

1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
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Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

1 Cylinder

As Required x Temp Core

US32D SA 087100

END OF SECTION 08 71 02

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SECTION 08 71 03

DOOR HARDWARE - COMMONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section references specification sections relating to commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Sliding Doors.
 - 3. Other doors to the extent indicated.
- B. Commercial door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Electromechanical and access control door hardware.
 - 3. Electromechanical and access control door hardware power supplies, back-ups and surge protection.
 - 4. Automatic operators.
 - 5. Cylinders specified for doors in other sections.
- C. Related Sections:
 - 1. Division 08 Section "Integrated Door Opening Assemblies".
 - 2. Division 08 Section "Door Hardware".
 - 3. Division 08 Section "Automatic Door Operators".
- D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.
 - 1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
 - 2. ICC/IBC - International Building Code.
 - 3. NFPA 70 - National Electrical Code.
 - 4. NFPA 80 - Fire Doors and Windows.
 - 5. NFPA 101 - Life Safety Code.
 - 6. NFPA 105 - Installation of Smoke Door Assemblies.
 - 7. State Building Codes, Local Amendments.
- E. Standards: Reference Related Sections for requirements regarding compliance with applicable industry standards.

1.3 SUBMITTALS

- A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
 - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
 - 3. Content: Include the following information:
 - a. Type, style, function, size, label, hand, and finish of each door hardware item.
 - b. Manufacturer of each item.
 - c. Fastenings and other pertinent information.
 - d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
 - e. Explanation of abbreviations, symbols, and codes contained in schedule.
 - f. Mounting locations for door hardware.
 - g. Door and frame sizes and materials.
 - 4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared under the supervision of the Owner, separate schedule detailing final keying instructions for locksets and cylinders in writing. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner to approve submitted keying schedule prior to the ordering of permanent cylinders.
- D. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.
- E. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals. The manual to include the name, address, and contact information of the manufacturers providing the hardware and their nearest service representatives. The final copies delivered after completion of the installation test to include "as built" modifications made during installation, checkout, and acceptance.

- F. Warranties and Maintenance: Special warranties and maintenance agreements specified in the Related Sections.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
- C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.5 WARRANTY

- A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.6 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Refer to "PART 3 – EXECUTION" for required specification sections.

PART 3 - EXECUTION

3.1 DOOR HARDWARE SETS

- A. The door hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.
 - 1. Quantities listed are for each pair of doors, or for each single door.
 - 2. The supplier is responsible for handling and sizing all products.

3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
 4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.
- B. Products listed in the hardware sets shall be supplied by and in accordance with the requirements described in the specification section as noted for each item.
1. Section 08 17 00 – Integrated Door Opening Assemblies.
 2. Section 08 71 00 – Door Hardware.
 3. Section 28 15 15.11 – Card Key Access Control Hardware.
- C. Manufacturer's Abbreviations:
1. MK - McKinney
 2. PE - Pemko
 3. MR - Markar
 4. SU - Securitron
 5. RO - Rockwood
 6. SA - SARGENT
 7. VI - ASSA ABLOY Hospitality
 8. ET - Emtek
 9. OT - Other
 10. AD - Adams Rite
 11. TC - Trimco
 12. RI - RITE Door
 13. BE - dormakaba Best
 14. HS - HES
 15. RF - Rixson
 16. NO - Norton

Hardware Sets

Set: 1.0

Doors: 152A, 152B

1 Continuous Hinge	CFM__SLF-HD1 PT	PE 087100	
1 Electric Power Transfer	EL-CEPT	SU 087100	↗
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D SA 087100	↗
1 Push Bar & Pull	BF15747	US32D RO 087100	
1 Automatic Opener	6331	689 NO 087100	↗
1 Threshold	253x3AFG MSES25SS	PE 087100	
1 ElectroLynx Harness - Frame	QC-C1500P	MK 087100	↗

1 ElectroLynx Harness - Door	QC-CXXX (Size as required)		MK 087100	↘
2 Wave Wall Switch	700		NO 087100	↘
1 Card Reader	VingCard		VI 281515.11	
1 Position Switch	DPS-M-GY		SU 087100	↘
1 Power Supply	VingCard		VI 281515.11	

Set: 2.0

Doors: 101B

2 Continuous Hinge	CFM__SLF-HD1		PE 087100	
1 Magnetic Lock	M680EBDX	630	SU 087100	↘
1 Magnetic Lock	M680EBD	630	SU 087100	↘
2 Push Bar & Pull	BF15747	US32D	RO 087100	
2 Automatic Opener	6331	689	NO 087100	↘
1 Threshold	253x3AFG MSES25SS		PE 087100	
2 Wave Wall Switch	700		NO 087100	↘
1 Card Reader	VingCard		VI 281515.11	
1 Push Button	EEB2		SU 087100	↘
1 Position Switch	DPS-M-GY		SU 087100	↘
1 Power Supply	VingCard		VI 281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 3.0

Doors: PT-1A, PT-2A, PT-2B

1 Continuous Hinge	CFM__SLF-HD1		PE 087100	
1 Mortise Deadlock	MS1850S	628	AD 087100	
2 Permanent Core	Compatible with Facility's Existing System	626	BE 087100	
2 Cylinder	As Required x Temp Core	US32D	SA 087100	
1 Push Bar & Pull	BF15747	US32D	RO 087100	
1 Conc Overhead Hold Open	1-326	630	RF 087100	
1 Automatic Opener	6311	689	NO 087100	↘
1 Threshold	253x3AFG MSES25SS		PE 087100	
1 Wave Wall Switch	700		NO 087100	↘
1 Position Switch	DPS-M-GY		SU 087100	↘

Notes: Operational Narrative by Specification Section 281515.11.

Set: 4.0

Doors: 177

1 Continuous Hinge	CFM__SLF-HD1		PE	087100	
1 Magnetic Lock	M680EBDX	630	SU	087100	↘
1 Push Bar & Pull	BF15747	US32D	RO	087100	
1 Automatic Opener	6331	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Wave Wall Switch	700		NO	087100	↘
1 Card Reader	VingCard		VI	281515.11	
1 Push Button	EEB2		SU	087100	↘
1 Card Reader	Genetec		OT	281300	
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 5.0

Doors: 197B

2 Continuous Hinge	CFM__SLF-HD1		PE	087100	
2 Push Bar & Pull	BF15747	US32D	RO	087100	
2 Automatic Opener	6331	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
2 Wave Wall Switch	700		NO	087100	↘
2 Position Switch	DPS-M-GY		SU	087100	↘

Set: 7.0

Doors: 214B

1 Rim Exit Device, Storeroom	16 43 72 8804 ETMV	US32D	SA	087100	
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Surface Closer	281 CPS	EN	SA	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 Position Switch	DPS-M-GY		SU	087100	↘

Set: 8.0

Doors: 159B

1 Continuous Hinge	CFM__HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT		SU	087100	↘
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D	SA	087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	

1 Conc Overhead Stop	1-X36	630	RF	087100	
1 Automatic Opener	6311	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100	↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)		MK	087100	↘
2 Wave Wall Switch	700		NO	087100	↘
1 Power Supply	AQD6		SU	087100	↘

Set: 9.0

Doors: [140A](#), [140B](#), [182B](#)

1 Continuous Hinge	CFM__HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT		SU	087100	↘
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D	SA	087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Automatic Opener	6331	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100	↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)		MK	087100	↘
1 Wave Wall Switch	700		NO	087100	↘
1 Card Reader	VingCard		VI	281515.11	
1 Position Switch	DPS-M-GY		SU	087100	↘
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 9.1

Doors: [182C](#), [192B](#)

1 Continuous Hinge	CFM__HD1 PT		PE	087100	
1 Electric Power Transfer	EL-CEPT		SU	087100	↘
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D	SA	087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Automatic Opener	6311	689	NO	087100	↘
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100	↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)		MK	087100	↘

1 Wave Wall Switch	700	NO 087100	↘
1 Card Reader	VingCard	VI 281515.11	
1 Card Reader	Genetec	OT 281300	
1 Position Switch	DPS-M-GY	SU 087100	↘
1 Power Supply	VingCard	VI 281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 9.2

Doors: [ST1-1A](#)

1 Continuous Hinge	CFM__HD1 PT	PE 087100	
Electric Power Transfer	EL-CEPT	SU 087100	↘
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D SA 087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100	
1 Surface Closer	281 CPS	EN SA 087100	
1 Threshold	253x3AFG MSES25SS	PE 087100	
1 Sweep	18061CNB	PE 087100	
1 ElectroLynx Harness - Frame	QC-C1500P	MK 087100	↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)	MK 087100	↘
1 Card Reader	VingCard	VI 281515.11	
1 Position Switch	DPS-M-GY	SU 087100	↘
1 Power Supply	VingCard	VI 281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 10.0

Doors: [124A](#)

1 Continuous Hinge	CFM__HD1	PE 087100	
1 Exit Device - VingCard	K7100	US32D VI 281515.11	
1 VingCard Exit Device Trim	4G RFID Jeily 6464	US26D VI 281515.11	
1 Surface Closer	281 CPS	EN SA 087100	
1 Threshold	253x3AFG MSES25SS	PE 087100	
1 Sweep	18061CNB	PE 087100	
1 Position Switch	DPS-M-GY	SU 087100	↘

Set: 11.0

Doors: [118C](#), [120A](#)

2 Continuous Hinge	CFM__HD1	PE 087100	
1 Dust Proof Strike	570	US26D RO 087100	

2 Flush Bolt	555	US26D RO	087100
1 Storeroom Lock	72 8204 COMV	US26D SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100
1 Conc Overhead Stop	1-X36	630 RF	087100
1 Surface Closer	281 CPS	EN SA	087100
1 Threshold	253x3AFG MSES25SS	PE	087100
2 Sweep	18061CNB	PE	087100
2 Astragal	18041CNB	PE	087100
2 Position Switch	DPS-M-GY	SU	087100 ↗

Set: 12.0

Doors: 153B

1 Continuous Hinge	CFM__HD1	PE	087100
1 Storeroom Lock	72 8204 COMV	US26D SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100
1 Surface Closer	281 CPS	EN SA	087100
1 Threshold	253x3AFG MSES25SS	PE	087100
1 Sweep	18061CNB	PE	087100
1 Position Switch	DPS-M-GY	SU	087100 ↗

Set: 13.0

Doors: 130C, 130D, 130E

2 Continuous Hinge	CFM__HD1	PE	087100
1 Dust Proof Strike	570	US26D RO	087100
2 Flush Bolt	555	US26D RO	087100
1 Dormitory/Exit Lock	72 8225 COMV	US26D SA	087100
2 Conc Overhead Stop	1-X36	630 RF	087100
1 Threshold	253x3AFG MSES25SS	PE	087100
2 Sweep	18061CNB	PE	087100
2 Astragal	18041CNB	PE	087100
1 Position Switch	DPS-M-GY	SU	087100 ↗

Set: 14.1

Doors: RW001

1 Continuous Hinge	CFM__HD1	PE	087100
1 Dormitory/Exit Lock	72 8225 COMV	US26D SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100

1 Conc Overhead Stop	1-X36	630	RF	087100	
1 Surface Closer	281 UO	EN	SA	087100	
1 Threshold	253x3AFG MSES25SS		PE	087100	
1 Sweep	18061CNB		PE	087100	
1 Position Switch	DPS-M-GY		SU	087100	↘

Set: 15.0

Doors: 188

6 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D	MK	087100	
2 Concealed Vert Rod Exit, Classroom	16 43 72 WD8613 ETMV	US32D	SA	087100	
2 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
2 Surface Closer	351 UO	EN	SA	087100	
2 Electromagnetic Holder	998M	689	RF	087100	↘
2 Silencer	608 / 609		RO	087100	

Set: 16.0

Doors: 185C, 189C

3 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Electric Power Transfer	EL-CEPT		SU	087100	↘
1 Rim Exit Device, Storeroom	16 43 56 72 8804 ETMV	US32D	SA	087100	↘
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100	
1 Automatic Opener	6331	689	NO	087100	↘
3 Silencer	608 / 609		RO	087100	
1 ElectroLynx Harness - Frame	QC-C1500P		MK	087100	↘
1 ElectroLynx Harness - Door	QC-CXXX (Size as required)		MK	087100	↘
2 Wave Wall Switch	700		NO	087100	↘
1 Card Reader	VingCard		VI	281515.11	
1 Card Reader	Genetec		OT	281300	
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 16.1

Doors: ST1-2

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D	MK	087100	
1 Rim Exit Device, Passage	12 43 8815 ETMV	US32D	SA	087100	
1 Surface Closer	351 UO	EN	SA	087100	

1 Door Stop	400 / 441CU	US26D RO 087100
1 Gasketing	S773BL	PE 087100

Set: 16.2

Doors: [ST1-1B](#)

3 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D MK 087100
1 Magnetic Lock	M68D	SU 087100 ✂
1 Rim Exit Device, Passage	12 43 8815 ETMV	US32D SA 087100
1 Surface Closer	351 UO	EN SA 087100
1 Door Stop	400 / 441CU	US26D RO 087100
1 Gasketing	S773BL	PE 087100
1 Card Reader	VingCard	VI 281515.11
1 Motion Sensor	XMS	SU 087100 ✂
1 Push Button	EEB2	SU 087100 ✂
1 Power Supply	VingCard	VI 281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 17.0

Doors: [214A](#)

6 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D MK 087100
2 Surface Vert Rod Exit, Exit Only	12 43 NB8710 EO	US32D SA 087100
2 Surface Closer	351 UO	EN SA 087100
2 Door Stop	400 / 441CU	US26D RO 087100
1 Gasketing	S773BL	PE 087100
1 Astragal	S772BL	PE 087100

Set: 17.1

Doors: [E115](#), [E158](#), [E200](#), [E217](#)

6 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D MK 087100
2 Surface Vert Rod Exit, Passage	12 43 NB8715 ETMV	US32D SA 087100
2 Surface Closer	351 UO	EN SA 087100
2 Electromagnetic Holder	998M	689 RF 087100 ✂
1 Gasketing	S773BL	PE 087100
1 Astragal	S772BL	PE 087100

Set: 18.0

Doors: [144A](#), [175](#)

6 Hinge, Full Mortise	TA2714	US26D MK 087100
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1 Magnetic Lock	M680EBDX	630	SU	087100	↘
1 Magnetic Lock	M680EBD	630	SU	087100	↘
2 Push Pull	111x73C/73CL	US32D	RO	087100	
2 Surface Closer	351 UO	EN	SA	087100	
2 Automatic Opener	6311	689	NO	087100	↘
2 Door Stop	400 / 441CU	US26D	RO	087100	
2 Wave Wall Switch	700		NO	087100	↘
1 Card Reader	VingCard		VI	281515.11	
1 Push Button	EEB2		SU	087100	↘
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 18.1

Doors: 197A

6 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Magnetic Lock	M680EBDX	630	SU	087100	↘
1 Magnetic Lock	M680EBD	630	SU	087100	↘
2 Push Bar & Pull	BF15747	US32D	RO	087100	
2 Automatic Opener	6311	689	NO	087100	↘
2 Door Stop	400 / 441CU	US26D	RO	087100	
2 Wave Wall Switch	700		NO	087100	↘
1 Card Reader	VingCard		VI	281515.11	
1 Push Button	EEB2		SU	087100	↘
1 Card Reader	Genetec		OT	281300	
2 Position Switch	DPS-M-GY		SU	087100	↘
1 Power Supply	VingCard		VI	281515.11	

Notes: Operational Narrative by Specification Section 281515.11.

Set: 19.0

Doors: 116

6 Hinge, Full Mortise	TA2714	US26D	MK	087100	
1 Magnetic Lock	M680EBDX	630	SU	087100	↘
1 Magnetic Lock	M680EBD	630	SU	087100	↘
2 Push Pull	111x73C/73CL	US32D	RO	087100	
2 Conc Overhead Stop	1-X36	630	RF	087100	
2 Surface Closer	351 UO	EN	SA	087100	
1 Card Reader	VingCard		VI	281515.11	
1 Push Button	EEB2		SU	087100	↘

1 Power Supply VingCard VI 281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 20.0

Doors: 144B

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Magnetic Lock	M680EBDX	630 SU 087100 ✗
1 Push Pull	111x73C/73CL	US32D RO 087100
1 Automatic Opener	6311	689 NO 087100 ✗
1 Door Stop	400 / 441CU	US26D RO 087100
1 Wave Wall Switch	700	NO 087100 ✗
1 Card Reader	VingCard	VI 281515.11
1 Push Button	EEB2	SU 087100 ✗
1 Power Supply	VingCard	VI 281515.11

Notes: Operational Narrative by Specification Section 281515.11.

Set: 21.0

Doors: 118B, 121C, 121D, 122B, 122C

6 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Dust Proof Strike	570	US26D RO 087100
2 Flush Bolt	555	US26D RO 087100
1 Classroom Deadlock	72 4877	US26D SA 087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
2 Surface Closer	351 UO	EN SA 087100
2 Door Stop	400 / 441CU	US26D RO 087100
1 Gasketing	S773BL	PE 087100

Set: 21.1

Doors: 143, 207

6 Hinge, Full Mortise	TA2714	US26D MK 087100
2 Electric Power Transfer	EL-CEPT	SU 087100 ✗
2 Concealed Vert Rod Exit, Classroom	16 43 56 72 WD8613 ETMV	US32D SA 087100 ✗
2 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
2 Automatic Opener	6331	689 NO 087100 ✗
2 Door Stop	400 / 441CU	US26D RO 087100

1 Gasketing	S773BL	PE 087100	
1 Astragal	S772BL	PE 087100	
2 ElectroLynx Harness - Frame	QC-C1500P	MK 087100	↘
2 ElectroLynx Harness - Door	QC-CXXX (Size as required)	MK 087100	↘
2 Wave Wall Switch	700	NO 087100	↘
1 Power Supply	AQD6	SU 087100	↘

Set: 21.2

Doors: 159A

1 Continuous Hinge	CFM__SLF-HD1	PE 087100	
1 Mortise Deadlock	MS1850S	628 AD 087100	
2 Permanent Core	Compatible with Facility's Existing System	626 BE 087100	
2 Cylinder	As Required x Temp Core	US32D SA 087100	
1 Push Bar & Pull	BF15747	US32D RO 087100	
1 Automatic Opener	6331	689 NO 087100	↘
2 Wave Wall Switch	700	NO 087100	↘

Set: 22.0

Doors: 119B

6 Hinge, Full Mortise	TA2714	US26D MK 087100	
1 Dust Proof Strike	570	US26D RO 087100	
1 Flush Bolt	555	US26D RO 087100	
1 Classroom Deadlock	72 4877	US26D SA 087100	
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100	
2 Surface Closer	351 PS	EN SA 087100	
1 Gasketing	S773BL	PE 087100	

Set: 23.0

Doors: 135, 136

3 Hinge, Full Mortise	TA2714	US26D MK 087100	
1 Classroom Deadlock	72 4877	US26D SA 087100	
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100	
1 Push Pull	111x73C/73CL	US32D RO 087100	
1 Surface Closer	351 UO	EN SA 087100	
1 Door Stop	400 / 441CU	US26D RO 087100	
3 Silencer	608 / 609	RO 087100	

Set: 24.0

Doors: 112A, 113A, 150A, 156A, 202A, 205A

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Classroom Deadlock	72 4877	US26D SA 087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
1 Push Pull	111x73C/73CL	US32D RO 087100
1 Automatic Opener	6311	689 NO 087100 ↘
1 Door Stop	400 / 441CU	US26D RO 087100
3 Silencer	608 / 609	RO 087100
1 Wave Wall Switch	700	NO 087100 ↘

Set: 25.0

Doors: 117, 120B, 132B, 187, 190

6 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Dust Proof Strike	570	US26D RO 087100
2 Flush Bolt	555	US26D RO 087100
1 Storeroom Lock	72 8204 COMV	US26D SA 087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
2 Conc Overhead Stop	1-X36	630 RF 087100
2 Silencer	608 / 609	RO 087100

Set: 25.1

Doors: 183, 184B

6 Hinge, Full Mortise, Hvy Wt	T4A3786	US26D MK 087100
1 Dust Proof Strike	570	US26D RO 087100
1 Flush Bolt	555	US26D RO 087100
1 Storeroom Lock	72 8204 COMV	US26D SA 087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
2 Conc Overhead Stop	1-X36	630 RF 087100
2 Silencer	608 / 609	RO 087100

Set: 26.0

Doors: 155

6 Hinge, Full Mortise	TA2314	US32D MK 087100
1 Dust Proof Strike	570	US26D RO 087100
2 Flush Bolt	555	US26D RO 087100
1 Storeroom/Closet Lock	CPC 72 8204 COMV	US26D SA 087100

1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
2 Conc Overhead Stop	1-X36	630	RF	087100
2 Silencer	608 / 609		RO	087100

Set: 27.0

Doors: 133, 151, 157, 180, 186, 191, 203

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Conc Overhead Stop	1-X36	630	RF	087100
3 Silencer	608 / 609		RO	087100

Set: 28.0

Doors: 117B, 142A, 146B, 179, 184A, 194, 208A, 214D, 214E, 214F

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Storeroom Lock	72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Conc Overhead Stop	1-X36	630	RF	087100
3 Silencer	608 / 609		RO	087100

Set: 29.0

Doors: 118A, 153A

3 Hinge, Full Mortise	TA2314	US32D	MK	087100
1 Storeroom/Closet Lock	CPC 72 8204 COMV	US26D	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Surface Closer	351 UO	EN	SA	087100
1 Door Stop	400 / 441CU	US26D	RO	087100
1 Gasketing	S773BL		PE	087100

Set: 30.0

Doors: 105, 108, 109, 110, 111, 125, 126, 127, 128, 129, 148, 149, 168, 169, 170, 171, 214G, 214H

3 Hinge, Full Mortise	TA2714	US26D	MK	087100
1 Office Lock	72 8205 TOMQ	US10B	SA	087100
1 Permanent Core	Compatible with Facility's Existing System	626	BE	087100
1 Door Stop	400 / 441CU	US26D	RO	087100

1 Gasketing S773BL PE 087100

Set: 31.0

Doors: 106, 162, 204, 216A, 216B

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Classroom Lock 72 8237 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Door Stop 400 / 441CU US26D RO 087100
3 Silencer 608 / 609 RO 087100

Set: 32.0

Doors: 119A, 123, 146A, 214J

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Classroom Lock 72 8237 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Conc Overhead Stop 1-X36 630 RF 087100
3 Silencer 608 / 609 RO 087100

Set: 33.0

Doors: 124B

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Classroom Lock 72 8237 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Surface Closer 351 UO EN SA 087100
1 Door Stop 400 / 441CU US26D RO 087100
3 Silencer 608 / 609 RO 087100

Set: 34.0

Doors: 132A

3 Hinge, Full Mortise TA2714 US26D MK 087100
1 Classroom Lock 72 8237 COMV US26D SA 087100
1 Permanent Core Compatible with Facility's Existing System 626 BE 087100
1 Surface Closer 351 UO EN SA 087100
1 Door Stop 400 / 441CU US26D RO 087100
1 Gasketing S773BL PE 087100

Set: 35.0

Doors: 150F, 156E

3 Hinge, Full Mortise	TA2314	US32D MK 087100
1 Classroom Lock	CPC 72 8237 COMV	US26D SA 087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
1 Surface Closer	351 UO	EN SA 087100
1 Door Stop	400 / 441CU	US26D RO 087100
1 Gasketing	S773BL	PE 087100

Set: 36.0

Doors: 214C

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Classroom Lock	72 8237 COMV	US26D SA 087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE 087100
1 Electric Strike	1006	630 HS 087100 ✗
1 Automatic Opener	6311	689 NO 087100 ✗
1 Gasketing	S773BL	PE 087100

Set: 37.0

Doors: 112C, 113C, 150C, 150D, 156B, 156C, 163, 195A, 195B, 195C, 195D, 195E, 195F, 195G, 202B, 202C, 202D, 205B, 205C, 205D, 205E

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Privacy Lock	V21 8265 COMV	US26D SA 087100
1 Door Stop	400 / 441CU	US26D RO 087100
3 Silencer	608 / 609	RO 087100
1 Coat Hook	RM802	US26D RO 087100

Set: 38.0

Doors: 112B, 113B, 150B

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Privacy Lock	V21 8265 COMV	US26D SA 087100
1 Concealed Overhead Stop	2-X36	630 RF 087100
3 Silencer	608 / 609	RO 087100
1 Coat Hook	RM802	US26D RO 087100

Set: 39.0

Doors: 103B, 111A, 119C, 165A, 166

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Passage Latch	8215 COMV	US26D SA 087100
1 Door Stop	400 / 441CU	US26D RO 087100
3 Silencer	608 / 609	RO 087100

Set: 40.0

Doors: E131

2 Continuous Hinge	FM300	630 MR 081700
2 Recessed Exit	D3676	US32D RI 081700
2 Trim	D3080-MV M	US32D RI 081700
2 Surface Closer	D-DC-351P9	EN RI 081700
2 Electromagnetic Holder	D-MDH-310	689 RI 081700 ↗
1 Gasketing	S773BL	PE 087100

Set: 41.0

Doors: 206

6 Hinge, Full Mortise	TA2714	US26D MK 087100
1 Dust Proof Strike	570	US26D RO 087100
2 Flush Bolt	555	US26D RO 087100
1 VingCard Lock	Signature	US26D VI 281515.11
2 Conc Overhead Stop	1-X36	630 RF 087100
2 Silencer	608 / 609	RO 087100

Set: 42.0

Doors: 134, 165B, 172, 173, 174, 178

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 VingCard Lock	Signature	US26D VI 281515.11
1 Surface Closer	351 UO	EN SA 087100
1 Door Stop	400 / 441CU	US26D RO 087100
3 Silencer	608 / 609	RO 087100

Set: 43.0

Doors: 104, 145A

3 Hinge, Full Mortise	TA2714	US26D MK 087100
1 VingCard Lock	Signature	US26D VI 281515.11
1 Surface Closer	351 UO	EN SA 087100
1 Door Stop	400 / 441CU	US26D RO 087100
1 Gasketing	S773BL	PE 087100

Set: 45.0

Doors: 138, 141B, 150E, 156D

1 Sliding Door Hdwe	PF28200A	PE	087100
1 INOX Pocket Door Lock (CYL x TT)	FH29PD8450	US26D OT	087100
1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100
1 Cylinder	As Required x Temp Core	US32D SA	087100
1 INOX Flush Pull (CYL)	FH2903	US26D OT	087100
1 INOX Flush Pull (TT)	FH2982	US26D OT	087100

Notes: Specified hardware requires a 1-3/4" thick door.

Set: 46.0

Doors: 141A

2 Sliding System	CAS200A-2	PE	087100
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Notes: Balance of hardware to be selected by architect.

Set: 47.0

Doors: 100, 101A, 103A, 121A, 121B, 122A, 130A, 130B, 145B, 161, 164, 182A, 215A

1 Permanent Core	Compatible with Facility's Existing System	626 BE	087100
1 Cylinder	As Required x Temp Core	US32D SA	087100

END OF SECTION 08 71 03

SECTION 08 80 00

GLAZING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Glass products.
2. Insulating glass.
3. Glazing sealants.
4. Glazing tapes.
5. Miscellaneous glazing materials.

B. Related Requirements:

1. Section 08 16 13.13 "Fiberglass Terrace Doors" for insulating glass provided with balcony doors.
2. Section 08 36 13 "Sectional Doors" for insulating glass provided with sectional doors.
3. Section 08 53 13 "Vinyl Windows" for insulating glass provided with window units.
4. Section 08 83 00 "Mirrors."
5. Section 08 88 13 "Fire-Rated Glazing."

1.2 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.
- C. Interspace: Space between lites of an insulating-glass unit.

1.3 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances to achieve proper safety margins for glazing retention under each design load case, load case combination, and service condition.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Review temporary protection requirements for glazing during and after installation.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For sealants, indicate VOC content in g/L.
- B. Glass Samples: For each type of glass product other than clear monolithic vision glass; manufacturer's standard size.
- C. Glazing Accessory Samples: For colored spacers, in manufacturer's standard length.
- D. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- E. Delegated Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturers of insulating-glass units with sputter-coated, low-E coatings, Installer, and sealant testing agency.
- B. Product Certificates: For glass.
- C. Product Test Reports: For fabricated glass and glazing sealants, for tests performed by a qualified testing agency.
 - 1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.
- D. Preconstruction adhesion and compatibility test report.
- E. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

- A. Fabricated-Glass Manufacturer Qualifications: A qualified manufacturer of fabricated glass units who is approved and certified by primary glass manufacturer.
- B. Installer Qualifications: A qualified glazing contractor for this Project who is certified under the North American Contractor Certification Program (NACC) for Architectural Glass & Metal (AG&M) contractors.
- C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.
- D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C1021 to conduct the testing indicated.
- E. Mockups: Build mockups to demonstrate aesthetic effects and to set quality standards for materials and execution.

1. Install glazing in mockups specified in Section 08 41 13 "Aluminum-Framed Entrances and Storefronts" to match glazing systems required for Project, including glazing methods.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glass product, tape sealant, gasket, glazing accessory, and glass-framing member for adhesion to and compatibility with elastomeric glazing sealants.
 1. Testing is not required if data are submitted based on previous testing of current sealant products and glazing materials matching those submitted.
 2. Use ASTM C1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of glazing sealants to glass, tape sealants, gaskets, and glazing channel substrates.
 3. Test no fewer than eight Samples of each type of material, including joint substrates, shims, sealant backings, secondary seals, and miscellaneous materials.
 4. Schedule enough time for testing and analyzing results to prevent delaying the Work.
 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with insulating-glass manufacturer's written instructions for venting and sealing units to avoid hermetic seal ruptures due to altitude change.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Do not proceed with glazing when ambient and substrate temperature conditions are outside limits permitted by glazing material manufacturers and when glazing channel substrates are wet from rain, frost, condensation, or other causes.
 1. Do not install glazing sealants when ambient and substrate temperature conditions are outside limits permitted by sealant manufacturer or are below 40 deg F.

1.11 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 1. Warranty Period: 10 years from date of Substantial Completion.
- B. Manufacturer's Special Warranty for Insulating Glass: Manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating

glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.
- C. Manufacturer's Special Warranty for Heat-Soaked Tempered Glass: Manufacturer agrees to replace heat-soaked tempered glass units that spontaneously break due to nickel sulfide (NiS) inclusions at a rate exceeding 0.3 percent (3/1000) within specified warranty period. Coverage for any other cause is excluded.
1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: Obtain from single source from single manufacturer for each glass type.
- B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- B. Delegated Design: Engage a qualified professional engineer, as defined in Section 01 40 00 "Quality Requirements," to design glazing.
- C. Structural Performance: Glazing shall withstand the following design loads within limits and under conditions indicated determined in accordance with the IBC and ASTM E1300:
 1. Design Wind Pressures: As indicated on Drawings.
 - a. Wind Design Data: As indicated on Drawings.
 2. Maximum Lateral Deflection: For glass supported on all four edges, limit center-of-glass deflection at design wind pressure to not more than 1/50 times the short-side length or 1 inch, whichever is less.
- D. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- E. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
 1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.

2. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
3. U-Factors: Center-of-glazing values, in accordance with NFRC 100 and based on most current non-beta version of LBL's WINDOW computer program, expressed as Btu/sq. ft. x h x deg F.
4. SHGC and Visible Transmittance: Center-of-glazing values, in accordance with NFRC 200 and based on most current non-beta version of LBL's WINDOW computer program.
5. Visible Reflectance: Center-of-glazing values, in accordance with NFRC 300.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 1. NGA Publications: "Glazing Manual."
 2. IGMA Publication for Insulating Glass: SIGMA TM-3000, "North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial and Residential Use."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.
- C. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of the IGCC.
- D. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass that complies with performance requirements and is not less than thickness indicated.
- E. Strength: Where annealed float glass is indicated, provide annealed float glass, heat-strengthened float glass, or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where heat-strengthened float glass is indicated, provide heat-strengthened float glass or fully tempered float glass as needed to comply with "Performance Requirements" Article. Where fully tempered float glass is indicated, provide fully tempered float glass.

2.4 GLASS PRODUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. AGC Glass Company North America, Inc.
 2. Cardinal Glass Industries.
 3. Guardian Glass; SunGuard.
 4. Pilkington North America.
 5. Vitro Architectural Glass.
- B. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- C. Fully Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
 2. Optical Distortion Limits:
 - a. Maximum peak-to-valley roll wave 0.003 inch in the central area of the glass lite, and 0.008 inch within 10.5 inches of the leading and trailing edge of the lite, per measured in accordance with ASTM C1651.
 - b. Maximum center-kink of 0.001 inch when roll wave is measured over the surface of the glass perpendicular to the direction of travel through the tempering furnace.
 - c. Maximum localized and overall bow (warp) per lite shall be 0.031 inch per lineal foot, one-half of maximum allowed by ASTM C1048.
 - d. Measure glass lites for optical distortion by on-line distortion measurement system. Retain test reports for three years following substantial completion. Submit test reports upon Architect's request.
- D. Heat-Strengthened Float Glass: ASTM C1048, Kind HS (heat strengthened), Type I, Condition A (uncoated) unless otherwise indicated, Type I, Class 1 (clear) or Class 2 (tinted) as indicated, Quality-Q3.
1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
 2. Optical Distortion Limits:
 - a. Maximum peak-to-valley roll wave 0.003 inch in the central area of the glass lite, and 0.008 inch within 10.5 inches of the leading and trailing edge of the lite, measured in accordance with ASTM C1651.
 - b. Maximum center-kink of 0.001 inch when roll wave is measured over the surface of the glass perpendicular to the direction of travel through the tempering furnace.
 - c. Maximum localized and overall bow (warp) per lite shall be 0.031 inch per lineal foot, one-half of maximum allowed by ASTM C1048.
 - d. Measure glass lites for optical distortion by on-line distortion measurement system. Retain test reports for three years following substantial completion. Submit test reports upon Architect's request.

2.5 INSULATING GLASS

- A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified in accordance with ASTM E2190.
1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated in "Insulating Glass Schedule" or comparable product by one of the following:
 - a. AGC Glass Company North America, Inc.
 - b. Cardinal Glass Industries.
 - c. Guardian Glass; SunGuard.
 - d. J.E. Berkowitz.
 - e. Pilkington North America.
 - f. Viracon, Inc.
 - g. Vitro Architectural Glass.
 2. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
 3. Perimeter Spacer: Warm-edge spacer.

- a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
 - 1) Technoform.
 - 2) Thermix; a brand of Ensinger USA.
 - b. Color: As selected by Architect from manufacturer's full range.
4. Desiccant: Molecular sieve or silica gel, or a blend of both.

2.6 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

B. Neutral-Curing Silicone Glazing Sealant, Class 50: Complying with ASTM C920, Type S, Grade NS, Use NT.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. May National Associates, Inc.; a subsidiary of Sika Corporation; Bondaflex Sil 295.
 - b. Pecora Corporation; 895NST.
 - c. Polymeric Systems, Inc.; PSI-641.
 - d. Sika Corporation; Sikasil WS-295.
 - e. The Dow Chemical Company; Dow Corning 756 SMS Building Sealant.
 - f. Tremco Incorporated; Spectrem 2.

2.7 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

1. AAMA 804.3 tape, where indicated.
2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

B. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.8 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- C. Setting Blocks: Type recommended in writing by sealant or glass manufacturer.
- D. Spacers: Type recommended in writing by sealant or glass manufacturer.
- E. Edge Blocks: Type recommended in writing by sealant or glass manufacturer.
- F. Cylindrical Glazing Sealant Backing: ASTM C1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

2.9 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
 1. Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.
 - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
 1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
 2. Presence and functioning of weep systems.
 3. Minimum required face and edge clearances.
 4. Effective sealing between joints of glass-framing members.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass includes glass with edge damage or other imperfections that, when installed, could weaken glass, impair performance, or impair appearance.
- C. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- D. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- F. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch-minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- G. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.
- H. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first, then to jambs. Cover horizontal framing joints by applying tapes to jambs, then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks, and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- D. Installation with Pressure-Glazing Stops: Center glass lites in openings on setting blocks, and press firmly against soft compression gasket. Install dense compression gaskets and pressure-glazing stops, applying pressure uniformly to compression gaskets. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended in writing by gasket manufacturer.
- E. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances and to prevent sealant from extruding into glass channel and blocking weep systems until sealants cure. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.

- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer. Remove and replace glass that cannot be cleaned without damage to coatings.
- C. Remove and replace glass that is damaged during construction period.

3.8 MONOLITHIC GLASS SCHEDULE

- A. Clear Glass Annealed float glass unless otherwise indicated.
 - 1. Minimum Thickness: 6 mm.
 - 2. Provide heat-strengthened float glass where indicated and where required to meet specified performance requirements.
 - 3. Provide fully tempered float glass where indicated and where required by authorities having jurisdiction.
 - a. Safety glazing required.

3.9 INSULATING GLASS SCHEDULE

- A. Low-E-Coated, Clear Insulating Glass:
 - 1. Basis-of-Design Product: Vitro Architectural Glass; Solarban 60 (2) Clear + Clear.
 - 2. Overall Unit Thickness: 1 inch.
 - 3. Minimum Thickness of Each Glass Lite: 6 mm.
 - 4. Outdoor Lite: Heat-strengthened float glass unless otherwise indicated.
 - 5. Interspace Content: Argon.
 - 6. Indoor Lite: Heat-strengthened float glass unless otherwise indicated.
 - 7. Low-E Coating: Pyrolytic on second surface.
 - 8. Winter Nighttime U-Factor: 0.24 maximum.
 - 9. Visible Light Transmittance (VLT): 70 percent minimum.
 - 10. Solar Heat Gain Coefficient (SHGC): 0.39 maximum.
 - 11. Provide fully tempered float glass where required by authorities having jurisdiction.
 - a. Safety glazing required.

END OF SECTION 08 80 00

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SECTION 08 83 00

MIRRORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes the following types of silvered flat glass mirrors:
 - 1. Annealed monolithic glass mirrors.
- B. Related Requirements:
 - 1. Section 10 28 00 "Toilet, Bath, and Laundry Accessories" for metal-framed mirrors.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Mirrors. Include description of materials and process used to produce each type of silvered flat glass mirror specified that indicates sources of glass, glass coating components, edge sealer, and quality-control provisions.
- B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachment details.
- C. Samples: For each type of the following:
 - 1. Mirrors: 12 inches square, including edge treatment on two adjoining edges.
 - 2. Mirror Clips / Cleats: Full size.
 - 3. Mirror Trim: 12 inches long.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of mirror and mirror mastic.
- C. Preconstruction Test Reports: From mirror manufacturer indicating that mirror mastic was tested for compatibility and adhesion with mirror backing and substrates on which mirrors are installed.

- D. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For mirrors to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Mirror Mastic Compatibility Test: Submit mirror mastic products to mirror manufacturer for testing to determine compatibility of mastic with mirror backing.
 - 1. Testing is not required if data are submitted based on previous testing of mirror mastic products and mirror backing matching those submitted.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect mirrors according to mirror manufacturer's written instructions and as needed to prevent damage to mirrors from moisture, condensation, temperature changes, direct exposure to sun, or other causes.
- B. Comply with mirror manufacturer's written instructions for shipping, storing, and handling mirrors as needed to prevent deterioration of silvering, damage to edges, and abrasion of glass surfaces and applied coatings. Store indoors.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install mirrors until ambient temperature and humidity conditions are maintained at levels indicated for final occupancy.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.
 - 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Binswanger Glass.
 2. Gardner Glass Products, Inc.
 3. Glasswerks LA, Inc.
 4. Guardian Industries Corp.
 5. Lenoir Mirror Company.
 6. Trulite Glass & Aluminum Solutions.
 7. Virginia Mirror Company, Inc.
- B. Source Limitations for Mirrors: Obtain mirrors from single source from single manufacturer.
- C. Source Limitations for Mirror Accessories: Obtain mirror glazing accessories from single source.

2.2 SILVERED FLAT GLASS MIRRORS

- A. Mirrors, General: ASTM C 1503.
- B. Annealed Monolithic Glass Mirrors: Mirror Select Quality, clear.
1. Nominal Thickness: 6.0 mm.

2.3 MISCELLANEOUS MATERIALS

- A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- B. Edge Sealer: Coating compatible with glass coating and approved by mirror manufacturer for use in protecting against silver deterioration at mirrored glass edges.
- C. Mirror Mastic: An adhesive setting compound, asbestos-free, produced specifically for setting mirrors and certified by both mirror and mastic manufacturer as compatible with glass coating and substrates on which mirrors will be installed.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Franklin International.
 - b. Laurence, C. R. Co., Inc.
 - c. Liquid Nails Adhesive.
 - d. Palmer Products Corporation.
 - e. Royal Adhesives & Sealants, LLC.
 2. Adhesive shall have a VOC content of 70 g/L or less.

- D. Film Backing for Safety Mirrors: Film backing and pressure-sensitive adhesive; both compatible with mirror backing paint as certified by mirror manufacturer.

2.4 MIRROR HARDWARE

- A. Aluminum J-Channels: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated and in lengths required to cover edges of mirrors in a single piece.

- 1. Bottom and Side Trim: J-channels formed with front leg and back leg not less than 3/8 and 7/8 inch in height, respectively, and a thickness of not less than 0.04 inch.

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1) Andscot Company, Inc.
 - 2) Laurence, C. R. Co., Inc.
 - 3) Stylmark, Inc.

- 2. Top Trim: J-channels formed with front leg and back leg not less than 5/8 and 1 inch in height, respectively, and a thickness of not less than 0.04 inch.

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- 1) Andscot Company, Inc.
 - 2) Laurence, C. R. Co., Inc.
 - 3) Stylmark, Inc.

- 3. Finish: Clear bright anodized.

- B. Hanging Cleat: Interlocking 6" Heavy Duty Cleat and T-Screw, Anchor and Plate Set at all mirrors

- a. Manufacturers: Subject to compliance with requirements, provide products by the following or an approved equal:

- 1) Picture Hardware.com – Model #HH74
 - 2) Picture Hardware.com – Model #SC09

- C. Fasteners: Fabricated of same basic metal and alloy as fastened metal and matching it in finished color and texture where fasteners are exposed.

- D. Anchors and Inserts: Provide devices as required for mirror hardware installation. Provide toothed or lead-shield, expansion-bolt devices for drilled-in-place anchors. Provide galvanized anchors and inserts for applications on inside face of exterior walls and where indicated.

2.5 FABRICATION

- A. Fabricate mirrors in the shop to greatest extent possible.

- B. Fabricate cutouts for notches and holes in mirrors without marring visible surfaces. Locate and size cutouts so they fit closely around penetrations in mirrors.
- C. Mirror Edge Treatment: Flat polished, unless otherwise indicated.
 - 1. Seal edges of mirrors with edge sealer after edge treatment to prevent chemical or atmospheric penetration of glass coating.
 - 2. Require mirror manufacturer to perform edge treatment and sealing in factory immediately after cutting to final sizes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.
- B. Verify compatibility with and suitability of substrates, including compatibility of existing finishes or primers with mirror mastic.
- C. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.

3.2 PREPARATION

- A. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.

3.3 INSTALLATION

- A. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
 - 1. GANA Publications: "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."
- B. Provide a minimum airspace of 1/8 inch between back of mirrors and mounting surface for air circulation between back of mirrors and face of mounting surface.
- C. Install mirrors with mastic and mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors.
 - 1. Aluminum J-Channels: Provide setting blocks 1/8 inch thick by 4 inches long at quarter points. To prevent trapping water, provide, between setting blocks, two slotted weeps not less than 1/4 inch wide by 3/8 inch long at bottom channel.

2. Mirror Clips: Place a felt or plastic pad between mirror and each clip to prevent spalling of mirror edges. Locate clips so they are symmetrically placed and evenly spaced.
3. Install mastic as follows:
 - a. Apply barrier coat to mirror backing where approved in writing by manufacturers of mirrors and backing material.
 - b. Apply mastic to comply with mastic manufacturer's written instructions for coverage and to allow air circulation between back of mirrors and face of mounting surface.
 - c. After mastic is applied, align mirrors and press into place while maintaining a minimum airspace of 1/8 inch between back of mirrors and mounting surface.

3.4 CLEANING AND PROTECTION

- A. Protect mirrors from breakage and contaminating substances resulting from construction operations.
- B. Do not permit edges of mirrors to be exposed to standing water.
- C. Maintain environmental conditions that prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.
- D. Clean exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Clean mirrors as recommended in writing by mirror manufacturer.

END OF SECTION 08 83 00

SECTION 08 88 13

FIRE-RATED GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fire-protection-rated glazing installed in narrow light frames in fire-rated doors at stairs.

1.3 DEFINITIONS

- A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.
- B. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For sealants, indicate VOC content in g/L.
- B. Glass Samples: For each type of glass product; 12 inches square.
- C. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and glass testing agency.
- B. Product Certificates: For each type of glass and glazing product.
- C. Sample Warranties: For special warranties.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the NGA's Certified Glass Installer Program.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect glazing materials in accordance with manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install fire-resistant glazing until spaces are enclosed and weathertight and temporary HVAC system is operating and maintaining ambient temperature conditions at occupancy levels during remainder of construction period.

1.10 WARRANTY

- A. Manufacturer's Special Warranty for Laminated Glass: Manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glass: For each glass type, obtain from single source from single manufacturer.
- B. Source Limitations for Glazing Accessories: For each product and installation method, obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Installed glazing systems shall withstand normal thermal movement and impact loads (where applicable) without failure, including loss or glass breakage attributable to defective manufacture, fabrication, or installation; deterioration of glazing materials; or other defects in construction.

2.3 GLASS PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glass product manufacturers and organization below unless more stringent requirements are indicated. See these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - 1. NGA Publications: "Laminated Glazing Reference Manual" and "Glazing Manual."
- B. Safety Glazing Labeling: Where safety glazing is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, glass thickness, and safety glazing standard with which glass complies.

2.4 GLASS PRODUCTS

- A. Float Glass: ASTM C1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.
- B. Tempered Float Glass: ASTM C1048, Kind FT (fully tempered), Condition A (uncoated) unless otherwise indicated, Type I, Class I (clear) unless otherwise indicated, Quality-Q3.
 - 1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed unless otherwise indicated.
- C. Laminated Glass: ASTM C1172. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.
 - 1. Construction: Laminate glass with polyvinyl butyral interlayer unless fire-protection or fire-resistance rating is based on another product.
 - 2. Interlayer Thickness: Provide thickness as needed to comply with requirements.
 - 3. Interlayer Color: Clear unless otherwise indicated.

2.5 FIRE-PROTECTION-RATED GLAZING

- A. Fire-Protection-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on positive-pressure testing in accordance with NFPA 257 or UL 9, including hose-stream test, and shall comply with NFPA 80.
 - 1. Fire-protection-rated glazing required to have a fire-protection rating of 20 minutes shall be exempt from hose-stream test.
- B. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name; test standard; whether glazing is permitted to be used in doors or openings; if permitted in openings, whether glazing has passed hose-stream test; whether glazing meets 450 deg F temperature-rise limitation; and fire-resistance rating in minutes.
- C. Fire-Protection-Rated Film-Faced Ceramic Glazing: Clear, ceramic flat glass; 5-mm thickness; faced on one surface with a clear glazing film; complying with 16 CFR 1201, Category II.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. SAFTI FIRST Fire Rated Glazing Solutions; Pyran Platinum F.

- b. Schott North America, Inc.; Pyran Platinum F.
- c. Technical Glass Products; FireLite NT.
- d. Vetrotech Saint-Gobain; Keralite Filmed.

D. Fire-Protection-Rated Laminated Ceramic Glazing: Laminated glass made from two plies of clear, ceramic glass; 8-mm total thickness; complying with 16 CFR 1201, Category II.

1. Products: Subject to compliance with requirements, provide one of the following:

- a. SAFTI FIRST Fire Rated Glazing Solutions; Pyran Platinum L.
- b. Schott North America, Inc.; Pyran Platinum L.
- c. Technical Glass Products; FireLite Plus.
- d. Vetrotech Saint-Gobain; Keralite Laminated.

2.6 GLAZING ACCESSORIES

A. Provide glazing gaskets, glazing sealants, glazing tapes, setting blocks, spacers, edge blocks, and other glazing accessories that are compatible with glazing products and each other and are approved by testing agencies that listed and labeled fire-resistant glazing products with which products are used for applications and fire-protection ratings indicated.

B. Glazing Sealants for Fire-Rated Glazing Products: Neutral-curing silicone glazing sealant complying with ASTM C920, Type S, Grade NS, Class 50, Use NT. Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to the following:

- a. The Dow Chemical Company; Dow Corning® 795 Silicone Building Sealant.
- b. Tremco Incorporated; Spectrem 2.

2. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

C. Back-Bedding Mastic Glazing Tapes: Preformed, butyl-based, 100 percent solids elastomeric tape; nonstaining and nonmigrating in contact with nonporous surfaces; with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:

- 1. AAMA 804.3 tape, where indicated.
- 2. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
- 3. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

D. Expanded Cellular Glazing Tapes: Closed-cell, PVC foam tapes; factory coated with adhesive on both surfaces; and complying with AAMA 800 for the following types:

- 1. AAMA 810.1, Type 1, for glazing applications in which tape acts as primary sealant.
- 2. AAMA 810.1, Type 2, for glazing applications in which tape is used in combination with a full bead of liquid sealant.

2.7 MISCELLANEOUS GLAZING MATERIALS

- A. General: Provide products of material, size, and shape complying with referenced glazing standard, recommended in writing by manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- B. Perimeter Insulation for Fire-Resistance-Rated Glazing: Product that is approved by testing agency that listed and labeled fire-resistant glazing product with which it is used for application and fire-protection rating indicated.

2.8 FABRICATION OF GLAZING UNITS

- A. Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine framing, glazing channels, and stops, with Installer present, for compliance with manufacturing and installation tolerances, including those for size, squareness, and offsets at corners, and for compliance with minimum required face and edge clearances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- B. Examine glazing units to locate fire side and protected side. Label or mark units as needed so that fire side and protected side are readily identifiable. Do not use materials that leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Use methods approved by testing agencies that listed and labeled fire-resistant glazing products.
- B. Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials unless more stringent requirements are indicated, including those in referenced glazing publications.
- C. Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.

- D. Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- E. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- F. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- G. Provide spacers for glass lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to comply with system performance requirements.
 - 2. Provide 1/8-inch-minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- H. Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and in accordance with requirements in referenced glazing publications.
- I. Set glass lites with proper orientation so that coatings face fire side or protected side as specified.
- J. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- K. Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended in writing by gasket manufacturer.

3.4 TAPE GLAZING

- A. Position tapes on fixed stops so that, when compressed by glass, their exposed edges are flush with or protrude slightly above sightline of stops.
- B. Install tapes continuously, but not necessarily in one continuous length. Do not stretch tapes to make them fit opening.
- C. Cover vertical framing joints by applying tapes to heads and sills first and then to jambs. Cover horizontal framing joints by applying tapes to jambs and then to heads and sills.
- D. Place joints in tapes at corners of opening with adjoining lengths butted together, not lapped. Seal joints in tapes with compatible sealant approved by tape manufacturer.
- E. Do not remove release paper from tape until right before each glazing unit is installed.
- F. Center glass lites in openings on setting blocks and press firmly against tape by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.

- G. Apply cap bead of elastomeric sealant over exposed edge of tape.

3.5 GASKET GLAZING (DRY)

- A. Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- B. Insert soft compression gasket between glass and frame or fixed stop, so it is securely in place with joints miter cut and bonded together at corners.
- C. Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings.
- D. Install gaskets so they protrude past face of glazing stops.

3.6 SEALANT GLAZING (WET)

- A. Install continuous spacers, or spacers combined with cylindrical sealant backing, between glass lites and glazing stops to maintain glass face clearances. Secure spacers or spacers and backings in place and in position to control depth of installed sealant relative to edge clearance for optimum sealant performance.
- B. Force sealants into glazing channels to eliminate voids and to ensure complete wetting or bond of sealant to glass and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glass.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glass from contact with contaminating substances resulting from construction operations. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains.
 - 1. If, despite such protection, contaminating substances do contact with glass, remove substances immediately as recommended in writing by glass manufacturer.
- C. Remove and replace glass that is damaged during construction period.

3.8 FIRE-PROTECTION-RATED GLAZING SCHEDULE

- A. Glass Type FPGL-1: 20-minute fire-protection-rated glazing with hose-stream test; fire-protection-rated film-faced ceramic glazing or fire-protection-rated laminated ceramic glazing.
- B. Glass Type FPGL-2: 45-minute fire-protection-rated glazing; fire-protection-rated film-faced ceramic glazing or fire-protection-rated laminated ceramic glazing.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

- C. Glass Type FPGL-3: 90-minute fire-protection-rated glazing with 450 deg F temperature-rise limitation in rated doors only, with a maximum vision area of 100 sq. in.; fire-protection-rated film-faced ceramic glazing or fire-protection-rated laminated ceramic glazing.

END OF SECTION 08 88 13

SECTION 08 91 19

FIXED LOUVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Fixed extruded-aluminum louvers.
 - 2. Blank-off panels for louvers

1.3 DEFINITIONS

- A. Louver Terminology: Definitions of terms for metal louvers contained in AMCA 501 apply to this Section unless otherwise defined in this Section or in referenced standards.
- B. Horizontal Louver: Louver with horizontal blades (i.e., the axis of the blades are horizontal).
- C. Wind-Driven-Rain-Resistant Louver: Louver that provides specified wind-driven-rain performance, as determined by testing according to AMCA 500-L.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For louvers specified to bear AMCA seal, include printed catalog pages showing specified models with appropriate AMCA Certified Ratings Seals.
- B. Shop Drawings: For louvers and accessories. Include plans, elevations, sections, details, and attachments to other work. Show frame profiles and blade profiles, angles, and spacing.
 - 1. Show weep paths, gaskets, flashings, sealants, and other means of preventing water intrusion.
 - 2. Show mullion profiles and locations.
- C. Samples: For each type of metal finish required.
- D. Delegated-Design Submittal: For louvers indicated to comply with structural performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed according to AMCA 500-L by a qualified testing agency or by manufacturer and witnessed by a qualified testing agency, for each type of louver and showing compliance with performance requirements specified.
- B. Sample Warranties: For manufacturer's special warranties.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.8 WARRANTY

- A. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 - 2. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain fixed louvers from single source from a single manufacturer where indicated to be of same type, design, or factory-applied color finish.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design louvers, including comprehensive engineering analysis by a qualified professional engineer, using structural performance requirements and design criteria indicated.
- B. Structural Performance: Louvers shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated without permanent deformation of louver components, noise or metal fatigue caused by louver-blade rattle or flutter, or permanent damage to fasteners and anchors. Wind pressures shall be considered to act normal to the face of the building.

1. Wind Loads: Determine loads based on pressures as indicated on Drawings.
- C. Louver Performance Ratings: Provide louvers complying with requirements specified, as demonstrated by testing manufacturer's stock units identical to those provided, except for length and width according to AMCA 500-L.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.
- E. SMACNA Standard: Comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" for fabrication, construction details, and installation procedures.

2.3 FIXED EXTRUDED-ALUMINUM LOUVERS

- A. Horizontal, Wind-Driven-Rain-Resistant Louver:
 1. Basis-of-Design Product: Subject to compliance with requirements, provide American Warming and Ventilating; a Mestek Architectural Group company; LE-59 Wind-Driven Rain Louver or a comparable product by one of the following:
 - a. Airolite Company, LLC (The).
 - b. Construction Specialties, Inc.
 - c. Greenheck Fan Corporation.
 - d. Ruskin Company.
 2. Louver Depth: 5 inches.
 3. Frame and Blade Nominal Thickness: Not less than 0.060 inch for blades and 0.080 inch for frames.
 4. Louver Performance Ratings:
 - a. Free Area: Not less than 50 percent.
 - b. Pressure Drop: 0.31-inch wg at 1250-fpm and 10238-scfm.
 - c. Water Penetration: Not less than 99 percent effectiveness when subjected to a rainfall rate of 3 inches per hour and a wind speed of 29 mph.
 5. AMCA Seal: Mark units with AMCA Certified Ratings Seal.

2.4 LOUVER SCREENS

- A. General: Provide screen at each exterior louver.
 1. Screen Location for Fixed Louvers: Interior face.
 2. Screening Type: Bird screening.
- B. Secure screen frames to louver frames with stainless-steel machine screws, spaced a maximum of 6 inches from each corner and at 12 inches o.c.
- C. Louver Screen Frames: Fabricate with mitered corners to louver sizes indicated.
 1. Metal: Same type and form of metal as indicated for louver to which screens are attached. Reinforce extruded-aluminum screen frames at corners with clips.

2. Finish: Same finish as louver frames to which louver screens are attached.
3. Type: Non-rewirable, U-shaped frames.

D. Louver Screening for Aluminum Louvers:

1. Bird Screening: Aluminum, 1/2-inch-square mesh, 0.063-inch wire.

2.5 BLANK-OFF PANELS

A. Insulated Blank-Off Panels: Laminated panels consisting of an insulating core surfaced on back and front with metal sheets and attached to back of louver.

1. Thickness: 2 inches.
2. Metal Facing Sheets: Aluminum sheet, not less than 0.032-inch nominal thickness.
3. Insulating Core: Rigid, glass-fiber-board insulation or extruded-polystyrene foam.
4. Edge Treatment: Trim perimeter edges of blank-off panels with louver manufacturer's standard extruded-aluminum-channel frames, not less than 0.080-inch nominal thickness, with corners mitered and with same finish as panels.
5. Seal perimeter joints between panel faces and louver frames with gaskets or sealant.
6. Panel Finish: Same type of finish applied to louvers, but black color.
7. Attach blank-off panels with clips.

2.6 MATERIALS

A. Aluminum Extrusions: ASTM B221, Alloy 6063-T5, T-52, or T6.

B. Aluminum Sheet: ASTM B209, Alloy 3003 or 5005, with temper as required for forming, or as otherwise recommended by metal producer for required finish.

C. Fasteners: Use types and sizes to suit unit installation conditions.

1. Use tamper-resistant screws for exposed fasteners unless otherwise indicated.
2. For fastening aluminum, use aluminum or 300 series stainless-steel fasteners.
3. For color-finished louvers, use fasteners with heads that match color of louvers.

D. Postinstalled Fasteners for Concrete and Masonry: Torque-controlled expansion anchors, fabricated from stainless-steel components, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing according to ASTM E488/E488M conducted by a qualified testing agency.

E. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

2.7 FABRICATION

A. Factory assemble louvers to minimize field splicing and assembly. Disassemble units as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

B. Maintain equal louver blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

- C. Fabricate frames, including integral sills, to fit in openings of sizes indicated, with allowances made for fabrication and installation tolerances, adjoining material tolerances, and perimeter sealant joints.
 - 1. Frame Type: Channel unless otherwise indicated.
- D. Include supports, anchorages, and accessories required for complete assembly.
- E. Provide vertical mullions of type and at spacings indicated, but not more than is recommended by manufacturer, or 72 inches o.c., whichever is less.
 - 1. Exposed Mullions: Where indicated, provide units with exposed mullions of same width and depth as louver frame. Where length of louver exceeds fabrication and handling limitations, provide interlocking split mullions designed to permit expansion and contraction.
- F. Provide subsills made of same material as louvers or extended sills for recessed louvers.
- G. Join frame members to each other and to fixed louver blades with fillet welds concealed from view, threaded fasteners, or both, as standard with louver manufacturer unless otherwise indicated or size of louver assembly makes bolted connections between frame members necessary.

2.8 ALUMINUM FINISHES

- A. Finish louvers after assembly.
- B. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 1. Color and Gloss: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and openings, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Coordinate setting drawings, diagrams, templates, instructions, and directions for installation of anchorages that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to Project site.

3.3 INSTALLATION

- A. Locate and place louvers level, plumb, and at indicated alignment with adjacent work.
- B. Use concealed anchorages where possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.
- C. Form closely fitted joints with exposed connections accurately located and secured.
- D. Provide perimeter reveals and openings of uniform width for sealants and joint fillers, as indicated.
- E. Protect unpainted galvanized- and nonferrous-metal surfaces that are in contact with concrete, masonry, or dissimilar metals from corrosion and galvanic action by applying a heavy coating of bituminous paint or by separating surfaces with waterproof gaskets or nonmetallic flashing.
- F. Install concealed gaskets, flashings, joint fillers, and insulation as louver installation progresses, where weathertight louver joints are required. Comply with Section 07 92 00 "Joint Sealants" for sealants applied during louver installation.

3.4 ADJUSTING AND CLEANING

- A. Clean exposed louver surfaces that are not protected by temporary covering, to remove fingerprints and soil during construction period. Do not let soil accumulate during construction period.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers damaged during installation and construction, so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by Architect, remove damaged units and replace with new units.
 - 1. Touch up minor abrasions in finishes with air-dried coating that matches color and gloss of, and is compatible with, factory-applied finish coating.

END OF SECTION 08 91 19

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 09 - FINISHES

09 21 16.23	GYPSUM BOARD SHAFT WALL ASSEMBLIES
09 22 16	NON-STRUCTURAL METAL FRAMING
09 29 00	GYPSUM BOARD
09 30 00	TILING
09 51 13	ACOUSTICAL PANEL CEILINGS
09 64 00	WOOD FLOORING
09 65 13	RESILIENT BASE AND ACCESSORIES
09 65 16	RESILIENT SHEET FLOORING
09 65 19	RESILIENT TILE FLOORING
09 67 23	RESINOUS FLOORING
09 68 13	TILE CARPETING
09 68 16	SHEET CARPETING
09 72 00	WALL COVERINGS
09 91 13	EXTERIOR PAINTING
09 91 23	INTERIOR PAINTING
09 93 00	STAINING AND TRANSPARENT FINISHING

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SECTION 09 21 16.23

GYPSUM BOARD SHAFT WALL ASSEMBLIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes gypsum board shaft wall assemblies.
- B. Related Requirements:
 - 1. Section 09 22 16 "Non-Structural Metal Framing."
 - 2. Section 10 14 73 "Painted Signage" for wall-identification signs for fire and smoke assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For each component of gypsum board shaft wall assembly.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and support them on risers on a flat platform to prevent sagging.

1.5 FIELD CONDITIONS

- A. Environmental Limitations: Comply with gypsum-shaftliner-board manufacturer's written instructions.
- B. Do not install finish panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, or mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: Provide materials and construction identical to those of assemblies tested according to ASTM E90 and classified according to ASTM E413 by a testing and inspecting agency.
- C. Recycled Content of Gypsum Panel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.
- D. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

2.2 GYPSUM BOARD SHAFT WALL ASSEMBLIES

- A. Fire-Resistance Rating: As indicated on Drawings.
- B. STC Rating: 51, minimum.
- C. Gypsum Shaftliner Board:
 - 1. Moisture- and Mold-Resistant Type X: ASTM C1396/C1396M; manufacturer's proprietary fire-resistive liner panels with ASTM D3273 mold-resistance score of 10 as rated according to ASTM D3274, 1 inch thick, and with double beveled long edges.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) Georgia-Pacific Gypsum LLC; Dens-Glass Ultra Shaftliner.
 - 2) National Gypsum Company; Gold Bond Shaftliner XP Gypsum Board.
 - 3) USG Corporation; Sheetrock Brand Mold Tough Gypsum Liner Panel.
- D. Non-Load-Bearing Steel Framing, General: Complying with ASTM C645 requirements for metal unless otherwise indicated and complying with requirements for fire-resistance-rated assembly indicated.
 - 1. Protective Coating: ASTM A653/A653M, G60, hot-dip galvanized unless otherwise indicated.
- E. Studs: Manufacturer's standard profile for repetitive, corner, and end members as follows:
 - 1. Depth: As indicated on Drawings.
 - 2. Minimum Base-Metal Thickness: 0.033 inch (nominal 20-gage).
- F. Runner Tracks: Manufacturer's standard J-profile track with manufacturer's standard long-leg length, but at least 2 inches long and matching studs in depth.
 - 1. Minimum Base-Metal Thickness: Matching steel studs.

- G. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. GCP Applied Technologies Inc.; FlameSafe FlowTrak System.
 - b. Metal-Lite; The System.
 - c. The Steel Network, Inc.; VertiTrack VTD.
- H. Finish Panels: Gypsum board as specified in Section 09 29 00 "Gypsum Board" unless otherwise indicated on Drawings.
- I. Sound Attenuation Blankets: As specified in Section 09 29 00 "Gypsum Board."

2.3 AUXILIARY MATERIALS

- A. Provide auxiliary materials that comply with shaft wall manufacturer's written instructions.
- B. Trim Accessories: Cornerbead, edge trim, and control joints of material and shapes as specified in Section 09 29 00 "Gypsum Board" that comply with gypsum board shaft wall assembly manufacturer's written instructions for application indicated.
- C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
- D. Track Fasteners: Power-driven fasteners of size and material required to withstand loading conditions imposed on shaft wall assemblies without exceeding allowable design stress of track, fasteners, or structural substrates in which anchors are embedded.
 - 1. Expansion Anchors: Fabricated from corrosion-resistant materials, with allowable load or strength design capacities calculated according to ICC-ES AC193 and ACI 318 greater than or equal to the design load, as determined by testing per ASTM E488/E488M conducted by a qualified testing agency.
 - 2. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with allowable load capacities calculated according to ICC-ES AC70, greater than or equal to the design load, as determined by testing per ASTM E1190 conducted by a qualified testing agency.
- E. Reinforcing: Galvanized-steel reinforcing strips with 0.033-inch (nominal 20-gage) minimum thickness of base metal (uncoated).
- F. Acoustical Sealant: Section 07 92 19 "Acoustical Joint Sealants."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, or mold damaged.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Sprayed Fire-Resistive Materials: Coordinate with gypsum board shaft wall assemblies so both elements of Work remain complete and undamaged. Patch or replace sprayed fire-resistive materials removed or damaged during installation of shaft wall assemblies to comply with requirements specified in Section 07 81 00 "Applied Fire Protection."
- B. After sprayed fire-resistive materials are applied, remove only to extent necessary for installation of gypsum board shaft wall assemblies and without reducing the fire-resistive material thickness below that which is required to obtain fire-resistance rating indicated. Protect remaining fire-resistive materials from damage.

3.3 INSTALLATION

- A. General: Install gypsum board shaft wall assemblies to comply with requirements of fire-resistance-rated assemblies indicated and manufacturer's written installation instructions.
- B. Do not bridge building expansion joints with shaft wall assemblies; frame both sides of expansion joints with furring and other support.
- C. Install supplementary framing in gypsum board shaft wall assemblies around openings and as required for blocking, bracing, and support of gravity and pullout loads of fixtures, equipment, services, heavy trim, furnishings, wall-mounted door stops, and similar items that cannot be supported directly by shaft wall assembly framing.
 - 1. Reinforcing: Provide where items attach directly to shaft wall assembly as indicated on Drawings; accurately position and secure behind at least one layer of face panel.
- D. Penetrations: At penetrations in shaft wall, maintain fire-resistance rating of shaft wall assembly by installing supplementary steel framing around perimeter of penetration and fire protection behind boxes containing wiring devices, elevator call buttons and floor indicators, and similar items.
- E. Isolate perimeter of gypsum panels from building structure to prevent cracking of panels while maintaining continuity of fire-rated construction.
- F. Firestop Tracks: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
- G. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect while maintaining fire-resistance rating of gypsum board shaft wall assemblies.
- H. Sound-Rated Shaft Wall Assemblies: Seal gypsum board shaft walls with acoustical sealant at perimeter of each assembly where it abuts other work and at joints and penetrations within each assembly.
- I. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.4 PROTECTION

- A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- B. Remove and replace panels that are wet, moisture damaged, or mold damaged.
 - 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, and irregular shape.
 - 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 21 16.23

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SECTION 09 22 16

NON-STRUCTURAL METAL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Non-load-bearing steel framing systems for interior partitions.
- 2. Suspension systems for interior ceilings and soffits.
- 3. Grid suspension systems for gypsum board ceilings.

- B. Related Requirements:

- 1. Section 05 40 00 "Cold-Formed Metal Framing" for exterior and interior load-bearing and exterior non-load-bearing wall studs; floor joists; and roof rafters and ceiling joists.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. For products having recycled content, indicate postconsumer and preconsumer recycled content.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.

- B. Evaluation Reports: For embossed, high-strength steel studs and tracks, firestop tracks, post-installed anchors, and power-actuated fasteners, from ICC-ES or other qualified testing agency acceptable to authorities having jurisdiction.

1.5 QUALITY ASSURANCE

- A. Code-Compliance Certification of Studs and Tracks: Provide documentation that framing members are certified according to the product-certification program of the Certified Steel Stud Association, the Steel Framing Industry Association, or the Steel Stud Manufacturers Association.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For fire-resistance-rated assemblies that incorporate non-load-bearing steel framing, provide materials and construction identical to those tested in assembly indicated, according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated on Drawings, according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.
- C. Horizontal Deflection: For composite and non-composite wall assemblies, limited to 1/360 of the wall height based on horizontal loading of 5 lbf/sq. ft.

2.2 FRAMING SYSTEMS

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. Framing Members, General: Comply with ASTM C754 for conditions indicated.
 - 1. Steel Sheet Components: Comply with ASTM C645 requirements for steel unless otherwise indicated.
 - 2. Protective Coating: ASTM A653/A653M, G60, hot-dip galvanized unless otherwise indicated.
- C. Studs and Tracks: ASTM C645. Use either conventional steel studs and tracks or embossed, high-strength steel studs and tracks.
 - 1. Steel Studs and Tracks:
 - a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) CEMCO; California Expanded Metal Products Co.
 - 2) ClarkDietrich.
 - 3) Custom Stud.
 - 4) MarinoWARE.
 - 5) MBA Building Supplies.
 - 6) MRI Steel Framing, LLC.
 - 7) Phillips Manufacturing Co.
 - 8) Telling Industries.
 - 9) The Steel Network, Inc.
 - b. Minimum Base-Steel Thickness: As required by performance requirements for horizontal deflection.
 - c. Depth: As indicated on Drawings.
 - 2. Embossed, High Strength Steel Studs and Tracks: Roll-formed and embossed with surface deformations to stiffen the framing members so that they are structurally comparable to conventional ASTM C645 steel studs and tracks.
 - a. Products: Subject to compliance with requirements, provide the following:

- 1) ClarkDietrich; ProSTUD Drywall Framing.
 - b. Minimum Base-Steel Thickness: As required by horizontal deflection performance requirements.
 - c. Depth: As indicated on Drawings.
- D. Slip-Type Head Joints: Where indicated, provide one of the following:
1. Single Long-Leg Track System: ASTM C645 top track with 2-inch-deep flanges in thickness not less than indicated for studs, installed with studs friction fit into top track and with continuous bridging located within 12 inches of the top of studs to provide lateral bracing.
 2. Double-Track System: ASTM C645 top outer tracks, inside track with 2-inch-deep flanges in thickness not less than indicated for studs and fastened to studs, and outer track sized to friction-fit over inner track.
 3. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; in thickness not less than indicated for studs and in width to accommodate depth of studs.
 - a. Products: Subject to compliance with requirements, provide one of the following:
 - 1) ClarkDietrich; MaxTrak Slotted Deflection Track.
 - 2) MBA Building Supplies; FlatSteel Deflection Track or Slotted Deflecto Track.
 - 3) Metal-Lite; The System.
 - 4) Perfect Wall, Inc.; The System Slotted Deflection Track.
 - 5) Telling Industries; Vertical Slip Track or Vertical Slip Track II.
 - 6) The Steel Network, Inc.; VertiClip SLD or VertiTrack VTD.
- E. Firestop Tracks: Top track manufactured to allow partition heads to expand and contract with movement of structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.
1. Products: Subject to compliance with requirements, provide one of the following:
 - a. ClarkDietrich; BlazeFrame.
 - b. Fire Trak Corp; Fire Trak System attached to studs with Fire Trak Posi Klip.
 - c. Metal-Lite; The System.
 - d. Perfect Wall, Inc.; The System Slotted Deflection Track.
 - e. The Steel Network, Inc.; VertiTrack VT.
- F. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
1. Minimum Base-Metal Thickness: 0.0329 inch (nominal 20-gage).
- G. Cold-Rolled Channel Bridging: Steel, 0.0538-inch (nominal 16-gage) minimum base-metal thickness, with minimum 1/2-inch-wide flanges.
1. Depth: 1-1/2 inches unless otherwise indicated on Drawings.
 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch (nominal 14-gage) thick, galvanized steel.
- H. Hat-Shaped, Rigid Furring Channels: ASTM C645.
1. Minimum Base-Metal Thickness: 0.0329 inch (nominal 20-gage) unless otherwise indicated on Drawings.

2. Depth: As indicated on Drawings.
- I. Resilient Furring Channels: 1/2-inch-deep, steel sheet members designed to reduce sound transmission.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide ClarkDietrich; RC Deluxe. or a comparable product by one of the following:
 - a. MarinoWARE.
 - b. MBA Building Supplies.
 - c. MRI Steel Framing, LLC.
 - d. SCAFCO Steel Stud Company.
 - e. Steel Construction Systems.
 2. Configuration: Asymmetrical or hat shaped.
- J. Cold-Rolled Furring Channels: 0.053-inch (nominal 16-gage) uncoated-steel thickness, with minimum 1/2-inch-wide flanges.
 1. Depth: 3/4 inch.
 2. Furring Brackets: Adjustable, corrugated-edge-type steel sheet with minimum uncoated-steel thickness of 0.0329 inch (nominal 20-gage).
 3. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.
- K. Z-Shaped Furring: With slotted or nonslotted web, face flange of 1-1/4 inches, wall attachment flange of 7/8 inch, minimum uncoated-steel thickness of 0.0179 inch, and depth required to fit insulation thickness indicated.

2.3 SUSPENSION SYSTEMS

- A. Tie Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.062-inch-diameter wire, or double strand of 0.048-inch-diameter wire.
- B. Hanger Attachments to Concrete:
 1. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01, AC193, AC58, or AC308 as appropriate for the substrate.
 - a. Uses: Securing hangers to structure.
 - b. Type: Torque-controlled, expansion anchor, torque-controlled, adhesive anchor, or adhesive anchor.
 - c. Material for Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B633 or ASTM F1941, Class Fe/Zn 5, unless otherwise indicated.
 - d. Material for Exterior or Interior Locations and Where Stainless Steel Is Indicated: Alloy Group 1 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.
 2. Power-Actuated Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- C. Wire Hangers: ASTM A641/A641M, Class 1 zinc coating, soft temper, 0.16 inch in diameter.

- D. Carrying Channels (Main Runners): Cold-rolled, commercial-steel sheet with a base-metal thickness of 0.0538 inch (nominal 16-gage) and minimum 1/2-inch-wide flanges.
 - 1. Depth: 2 inches unless otherwise indicated on Drawings.

- E. Furring Channels (Furring Members):
 - 1. Cold-Rolled Channels: 0.0538-inch (nominal 16-gage) uncoated-steel thickness, with minimum 1/2-inch-wide flanges, 3/4 inch deep.
 - 2. Steel Studs and Tracks: ASTM C645.
 - a. Minimum Base-Metal Thickness: 0.0329 inch (nominal 20-gage) unless otherwise indicated on Drawings.
 - b. Depth: As indicated on Drawings.
 - 3. Embossed, High-Strength Steel Studs and Tracks: ASTM C645.
 - a. Minimum Base-Metal Thickness: 0.0190 inch (20-gage equivalent).
 - b. Depth: As indicated on Drawings.
 - 4. Hat-Shaped, Rigid Furring Channels: ASTM C645, 7/8 inch deep.
 - a. Minimum Base-Metal Thickness: 0.0329 inch (nominal 20-gage).
 - 5. Resilient Furring Channels: 1/2-inch-deep members designed to reduce sound transmission.
 - a. Configuration: Asymmetrical or hat shaped.

- F. Grid Suspension System for Gypsum Board Ceilings: ASTM C645, direct-hung system composed of main beams and cross-furring members that interlock.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Armstrong Ceiling & Wall Solutions; Drywall Grid Systems.
 - b. Rockfon (Rockwool International); 640/660 Drywall Ceiling Suspension.
 - c. USG Corporation; Drywall Suspension System.

2.4 AUXILIARY MATERIALS

- A. General: Provide auxiliary materials that comply with referenced installation standards.
 - 1. Fasteners for Steel Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

- B. Isolation Strip at Exterior Walls: Provide one of the following:
 - 1. Asphalt-Saturated Organic Felt: ASTM D226/D226M, Type I (No. 15 asphalt felt), nonperforated.
 - 2. Foam Gasket: Adhesive-backed, closed-cell vinyl foam strips that allow fastener penetration without foam displacement, 1/8 inch thick, in width to suit steel stud size.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates, with Installer present, and including welded hollow-metal frames, cast-in anchors, and structural framing, for compliance with requirements and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Suspended Assemblies: Coordinate installation of suspension systems with installation of overhead structure to ensure that inserts and other provisions for anchorages to building structure have been installed to receive hangers at spacing required to support the Work and that hangers will develop their full strength.
 - 1. Furnish concrete inserts and other devices indicated to other trades for installation in advance of time needed for coordination and construction.
- B. Coordination with Sprayed Fire-Resistive Materials:
 - 1. Before sprayed fire-resistive materials are applied, attach offset anchor plates or ceiling tracks to surfaces indicated to receive sprayed fire-resistive materials. Where offset anchor plates are required, provide continuous plates fastened to building structure not more than 24 inches o.c.
 - 2. After sprayed fire-resistive materials are applied, remove them only to extent necessary for installation of non-load-bearing steel framing. Do not reduce thickness of fire-resistive materials below that are required for fire-resistance ratings indicated. Protect adjacent fire-resistive materials from damage.

3.3 INSTALLATION, GENERAL

- A. Installation Standard: ASTM C754.
 - 1. Gypsum Board Assemblies: Also comply with requirements in ASTM C840 that apply to framing installation.
- B. Install framing and accessories plumb, square, and true to line, with connections securely fastened.
- C. Install supplementary framing, and blocking to support fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, or similar construction.
- D. Install bracing at terminations in assemblies.
- E. Do not bridge building control and expansion joints with non-load-bearing steel framing members. Frame both sides of joints independently.

3.4 INSTALLING FRAMED ASSEMBLIES

- A. Install framing system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
 - 1. Single-Layer Application: 16 inches o.c. unless otherwise indicated on Drawings
 - 2. Multilayer Application: 16 inches o.c. unless otherwise indicated on Drawings.
 - 3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated on Drawings.
- B. Where studs are installed directly against exterior masonry walls or dissimilar metals at exterior walls, install isolation strip between studs and exterior wall.
- C. Install studs so flanges within framing system point in same direction.
- D. Install tracks at floors and overhead supports. Extend framing full height to structural supports or substrates above suspended ceilings except where partitions are indicated to terminate at suspended ceilings. Continue framing around ducts that penetrate partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structural supports, install to produce joints at tops of framing systems that prevent axial loading of finished assemblies.
 - 2. Door Openings: Screw vertical studs at jambs to jamb anchor clips on door frames; install track section (for cripple studs) at head and secure to jamb studs.
 - a. Install two studs at each jamb unless otherwise indicated.
 - b. Install cripple studs at head adjacent to each jamb stud, with a minimum 1/2-inch clearance from jamb stud to allow for installation of control joint in finished assembly.
 - c. Extend jamb studs through suspended ceilings and attach to underside of overhead structure.
 - 3. Other Framed Openings: Frame openings other than door openings the same as required for door openings unless otherwise indicated. Install framing below sills of openings to match framing required above door heads.
 - 4. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicated and support closures and to make partitions continuous from floor to underside of solid structure.
 - a. Firestop Track: Where indicated, install to maintain continuity of fire-resistance-rated assembly indicated.
 - 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Direct Furring: Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. Z-Shaped Furring Members:
 - 1. Erect insulation, specified in Section 07 21 00 "Thermal Insulation," vertically and hold in place with Z-shaped furring members spaced 24 inches o.c.
 - 2. Except at exterior corners, securely attach narrow flanges of furring members to wall with concrete stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
 - 3. At exterior corners, attach wide flange of furring members to wall with short flange extending beyond corner; on adjacent wall surface, screw-attach short flange of furring

channel to web of attached channel. At interior corners, space second member no more than 12 inches from corner and cut insulation to fit.

- G. Installation Tolerance: Install each framing member so fastening surfaces vary not more than 1/8 inch from the plane formed by faces of adjacent framing.

3.5 INSTALLING CEILING SUSPENSION SYSTEMS

- A. Install suspension system components according to spacings indicated, but not greater than spacings required by referenced installation standards for assembly types.
1. Hangers: 48 inches o.c.
 2. Carrying Channels (Main Runners): 48 inches o.c.
 3. Furring Channels (Furring Members): 16 inches o.c.
- B. Isolate suspension systems from building structure where they abut or are penetrated by building structure to prevent transfer of loading imposed by structural movement.
- C. Suspend hangers from building structure as follows:
1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structural or suspension system.
 - a. Splay hangers only where required to miss obstructions and offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 2. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with locations of hangers required to support standard suspension system members, install supplemental suspension members and hangers in the form of trapezes or equivalent devices.
 - a. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced installation standards.
 3. Wire Hangers: Secure by looping and wire tying, either directly to structures or to inserts, eye screws, or other devices and fasteners that are secure and appropriate for substrate, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 4. Flat Hangers: Secure to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices and fasteners that are secure and appropriate for structure and hanger, and in a manner that will not cause hangers to deteriorate or otherwise fail.
 5. Do not attach hangers to steel roof deck.
 6. Do not attach hangers to permanent metal forms. Furnish cast-in-place hanger inserts that extend through forms.
 7. Do not attach hangers to rolled-in hanger tabs of composite steel floor deck.
 8. Do not connect or suspend steel framing from ducts, pipes, or conduit.
- D. Fire-Resistance-Rated Assemblies: Wire tie furring channels to supports.
- E. Grid Suspension Systems: Attach perimeter wall track or angle where grid suspension systems meet vertical surfaces. Mechanically join main beam and cross-furring members to each other and butt-cut to fit into wall track.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

- F. Installation Tolerances: Install suspension systems that are level to within 1/8 inch in 12 feet measured lengthwise on each member that will receive finishes and transversely between parallel members that will receive finishes.

END OF SECTION 09 22 16

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SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Interior gypsum board.
- 2. Exterior gypsum board for ceilings and soffits.
- 3. Sound attenuation blankets for installation in gypsum board assemblies such as at walls and partitions and above gypsum board ceilings.

- B. Related Requirements:

- 1. Section 05 40 00 "Cold-Formed Metal Framing" for load-bearing steel framing that supports gypsum board panels.
- 2. Section 06 16 00 "Sheathing" for gypsum sheathing for exterior walls.
- 3. Section 07 92 19 "Acoustical Joint Sealants" for acoustical joint sealants installed in gypsum board assemblies.
- 4. Section 09 21 16.23 "Gypsum Board Shaft Wall Assemblies" for metal shaft-wall framing, gypsum shaft liners, and other components of shaft-wall assemblies.
- 5. Section 09 22 16 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.
- 6. Section 09 30 00 "Tiling" for cementitious backer units installed as substrates for ceramic tile.
- 7. Section 10 14 73 "Painted Signage" for wall-identification signs in concealed accessible spaces for fire and smoke assemblies.

1.3 ACTION SUBMITTALS

- A. Product Data: For the following:

- 1. Gypsum board, Type X.
- 2. Mold-resistant gypsum board.
- 3. Exterior gypsum soffit board.
- 4. Interior trim.
- 5. Exterior trim.
- 6. Joint treatment materials.
- 7. Laminating adhesive.
- 8. Sound-attenuation blankets.
- 9. Acoustical sealant.

- B. Samples: For the following products:

1. Trim Accessories: Full-size Sample in 12-inch-long length for each trim accessory indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For low-emitting sound-attenuation blankets.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

1.6 FIELD CONDITIONS

- A. Environmental Limitations: Comply with ASTM C840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.
- B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.
- C. Do not install panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or blotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing agency.
- B. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E90 and classified according to ASTM E413 by an independent testing agency.

2.2 GYPSUM BOARD, GENERAL

- A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 50 percent.
- B. Size: Provide maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

2.3 INTERIOR GYPSUM BOARD

A. Gypsum Board, Type X: ASTM C1396/C1396M.

1. Basis-of-Design Product: Subject to compliance with requirements, provide National Gypsum Company; Gold Bond Fire-Shield Gypsum Board or a comparable product by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Georgia-Pacific Gypsum LLC.
 - c. USG Corporation.
2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

B. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

1. Basis-of-Design Product: Subject to compliance with requirements, provide National Gypsum Company; Gold Bond XP Fire-Shield Gypsum Board or a comparable product by one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America.
 - b. Georgia-Pacific Gypsum LLC.
 - c. USG Corporation.
2. Core: 5/8 inch, Type X.
3. Long Edges: Tapered.
4. Mold Resistance: ASTM D3273, score of 10 as rated according to ASTM D3274.

2.4 EXTERIOR GYPSUM BOARD FOR CEILINGS AND SOFFITS

A. Exterior Gypsum Soffit Board: ASTM C1396/C1396M, with manufacturer's standard edges.

1. Products: Subject to compliance with requirements, provide one of the following:
 - a. CertainTeed Corporation; Saint-Gobain North America; CertainTeed Exterior Soffit Board Type X.
 - b. USG Corporation; USG Sheetrock® Brand Exterior Gypsum Ceiling Board.
2. Core: 5/8 inch, Type X.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized-steel sheet.
2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. L-Bead: L-shaped; exposed long flange receives joint compound.

d. Expansion (control) joint.

B. Exterior Trim: ASTM C1047.

1. Material: Hot-dip galvanized-steel sheet, plastic, or rolled zinc.
2. Shapes:
 - a. Cornerbead.
 - b. LC-Bead: J-shaped; exposed long flange receives joint compound.
 - c. Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.
2. Exterior Gypsum Soffit Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.
3. Fill Coat: For second coat, use setting-type, sandable topping compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

D. Joint Compound for Exterior Applications:

1. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.

2.7 AUXILIARY MATERIALS

A. Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

1. Gypsum board and panel adhesives shall have a VOC content of 50 g/L or less.

C. Steel Drill Screws: ASTM C1002 unless otherwise indicated.

1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 inch (nominal 20-gage) to 0.112 inch thick

D. Sound-Attenuation Blankets: ASTM C665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
 2. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
 3. Low-Emitting Insulation: Provide sound-attenuation blankets that are certified to UL Environment GREENGUARD standards for low chemical emissions.
- E. Acoustical Sealant: As specified in Section 07 92 19 "Acoustical Joint Sealants."
1. Verify sealant has a VOC content of 250 g/L or less.
- F. Thermal Insulation: As specified in Section 07 21 00 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.
- B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION AND FINISHING OF PANELS, GENERAL

- A. Comply with ASTM C840.
- B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
- C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch of open space between panels. Do not force into place.
- D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
- E. Form control and expansion joints with space between edges of adjoining gypsum panels.
- F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. in area.
 2. Fit gypsum panels around ducts, pipes, and conduits.
 3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch-wide joints to install sealant.

- G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4- to 1/2-inch-wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
- H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
- I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.
- J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 INSTALLATION OF INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: As indicated on Drawings.
 - 2. Mold-Resistant Type: As indicated on Drawings.
- B. Single-Layer Application:
 - 1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
 - 2. On partitions/walls, apply gypsum panels horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - a. Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.
 - 3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
 - 4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
- C. Multilayer Application:
 - 1. On ceilings, apply gypsum board indicated for base layers before applying base layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints one framing member, 16 inches minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
 - 2. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.

3. On Z-shaped furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
 4. Fastening Methods: Fasten base layers and face layers separately to supports with screws unless otherwise indicated or required by fire-resistance-rated assembly.
- D. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written instructions and temporarily brace or fasten gypsum panels until fastening adhesive has set.

3.4 INSTALLATION OF EXTERIOR GYPSUM PANELS FOR CEILINGS AND SOFFITS

- A. Apply panels perpendicular to supports, with end joints staggered and located over supports.
1. Install with 1/4-inch open space where panels abut other construction or structural penetrations.
 2. Fasten with corrosion-resistant screws.

3.5 INSTALLATION OF TRIM ACCESSORIES

- A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Control Joints: Install control joints according to ASTM C840 and in specific locations approved by Architect for visual effect.
- C. Interior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners unless otherwise indicated.
 2. LC-Bead: Use at exposed panel edges.
 3. L-Bead: Use where indicated on Drawings.
- D. Exterior Trim: Install in the following locations:
1. Cornerbead: Use at outside corners.
 2. LC-Bead: Use at exposed panel edges.

3.6 FINISHING GYPSUM BOARD

- A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
- B. Prefill open joints and damaged surface areas.
- C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

- D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C840:
1. Level 1: Ceiling plenum areas, concealed areas, and where indicated on Drawings, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
 2. Level 2: Panels that are substrate for tile and where indicated on Drawings.
 3. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.
 - a. Primer and its application to surfaces are specified in Section 09 91 23 "Interior Painting."

3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.
- B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- C. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 30 00

TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Ceramic tile.
2. Glazed porcelain tile.
3. Glass tile.
4. Stone thresholds.
5. Waterproof membrane.
6. Crack isolation membrane.
7. Tile backing panels.
8. Metal edge strips.

- B. Related Sections:

1. Section 09 29 00 "Gypsum Board" for glass-mat, water-resistant backer board.
2. Section 09 30 33 "Stone Tiling."
3. Section 09 63 40 "Stone Flooring" for stone thresholds.

1.3 DEFINITIONS

- A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.
- B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in "American National Standard Specifications for Installation of Ceramic Tile."
- C. Module Size: Actual tile size plus joint width indicated.
- D. Face Size: Actual tile size, excluding spacer lugs.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples for Verification:
 - 1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
 - 2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples at least 12 inches square, but not fewer than 4 tiles. Use grout of type and in color or colors approved for completed Work.
 - 3. Full-size units of each type of trim and accessory for each color and finish required.
 - 4. Stone thresholds in 6-inch lengths.
 - 5. Metal edge strips in 6-inch lengths.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Tile and Trim Units: Furnish quantity of full-size units equal to 2 percent of amount installed for each type, composition, color, pattern, and size indicated.
 - 2. Grout: Furnish quantity of grout equal to 2 percent of amount installed for each type, composition, and color indicated.

1.7 QUALITY ASSURANCE

- A. Source Limitations for Tile: Obtain tile of each type and color or finish from one source or producer.
 - 1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.
- B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from one manufacturer and each aggregate from one source or producer.
- C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer for each product:
 - 1. Stone thresholds.
 - 2. Waterproof membrane.

3. Crack isolation membrane.
4. Joint sealants.
5. Cementitious backer units.
6. Metal edge strips.

D. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.
- B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.
- D. Store liquid materials in unopened containers and protected from freezing.
- E. Handle tile that has temporary protective coating on exposed surfaces to prevent coated surfaces from contacting backs or edges of other units. If coating does contact bonding surfaces of tile, remove coating from bonding surfaces before setting tile.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 PRODUCTS, GENERAL

- A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.
 1. Provide tile complying with Standard grade requirements unless otherwise indicated.
- B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCA installation methods specified in tile installation schedules, and other requirements specified.
- C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

- D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.
 - 1. Where tile is indicated for installation in swimming pools or in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.
- E. Factory-Applied Temporary Protective Coating: Where indicated under tile type, protect exposed surfaces of tile against adherence of mortar and grout by precoating with continuous film of petroleum paraffin wax, applied hot. Do not coat unexposed tile surfaces.

2.2 TILE PRODUCTS

- A. Tile Type [TL-A#]: Ceramic Tile
 - 1. Subject to compliance with requirements, provide product contained in the interior finish schedule documents.
 - 2. Tile Color and Pattern: As indicated by manufacturer's designations.
 - 3. Grout Color: As contained in the finish schedule documents.
 - 4. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base Cove: Cove, module size to match face tile size.
 - b. Base Cap for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - c. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - d. External Corners for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - e. Internal Corners: Field-buttet square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.
 - f. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.
- B. Tile Type [TL-F#]: Glazed Porcelain Tile
 - 1. Subject to compliance with requirements, provide product contained in the interior finish schedule documents.
 - 2. Tile Color and Pattern: As indicated by manufacturer's designations.
 - 3. Grout Color: As contained in the finish schedule documents.
 - 4. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base Cove: Cove, module size to match face tile size.
 - b. Base Cap for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - c. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - d. External Corners for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.

- e. Internal Corners: Field-buttet square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.
- f. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

C. Tile Type [TL-J#]: Glass Tile

- 1. Subject to compliance with requirements, provide product contained in the interior finish schedule documents.
- 2. Tile Color and Pattern: As indicated by manufacturer's designations.
- 3. Grout Color: As contained in the finish schedule documents.
- 4. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:
 - a. Base Cove: Cove, module size to match face tile size.
 - b. Base Cap for Thin-Set Mortar Installations: Surface bullnose, module size To match face tile size.
 - c. Wainscot Cap for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - d. External Corners for Thin-Set Mortar Installations: Surface bullnose, module size to match face tile size.
 - e. Internal Corners: Field-buttet square corners. For coved base and cap, use angle pieces designed to fit with stretcher shapes.
 - f. Tapered Transition Tile: Shape designed to effect transition between thickness of tile floor and adjoining floor finishes of different thickness, tapered to provide reduction in thickness from 1/2 to 1/4 inch across nominal 4-inch dimension.

2.3 THRESHOLDS [TL-H#]

- A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.
 - 1. Double Hollywood edge threshold. Limit height of threshold to 1/4 inch or less above adjacent floor surface. Build up adjacent surfaces as needed to achieve the 1/4" or less.
- B. Marble Thresholds: ASTM C 503, with a minimum abrasion resistance of 12 per ASTM C 1353 or ASTM C 241 and with honed finish.
 - 1. Description: Color: TBD, width determined by door frame.
 - 2. Location: At every entrance to resident, public, or staff toilet, bathing, locker, or shower facilities.

2.4 TILE BACKING PANELS

- A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, in maximum lengths available to minimize end-to-end butt joints.
 - 1. **Products:** Subject to compliance with requirements, provide one of the following:
 - a. **C-Cure; C-Cure Board 990.**

- b. [Custom Building Products; Wonderboard.](#)
- c. [FinPan, Inc.; Util-A-Crete Concrete Backer Board.](#)
- d. [USG Corporation; DUROCK Cement Board.](#)

2. Thickness: 1/2 inch.

2.5 WATERPROOF MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.10 and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
 1. [Products](#): Subject to compliance with requirements, provide the following:
 - a. [Schluter Systems L.P.; KERDI.](#)

2.6 CRACK ISOLATION MEMBRANE

- A. General: Manufacturer's standard product that complies with ANSI A118.12 for standard performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.
- B. Polyethylene Sheet: Polyethylene faced on both sides with fleece webbing; 0.008-inch nominal thickness.
 1. [Products](#): Subject to compliance with requirements, provide the following:
 - a. [Schluter Systems L.P.; KERDI.](#)
- C. Corrugated Polyethylene: Corrugated polyethylene with dovetail-shaped corrugations and with anchoring webbing on the underside; 3/16-inch nominal thickness.
 1. [Products](#): Subject to compliance with requirements, provide the following:
 - a. [Schluter Systems L.P.; DITRA.](#)

2.7 SETTING MATERIALS

- A. Latex-Portland Cement Mortar (Thin Set): ANSI A118.4.
 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. [Boiardi Products; a QEP company.](#)
 - b. [Bonsal American; an Oldcastle company.](#)
 - c. [Bostik, Inc.](#)
 - d. [Jamo Inc.](#)

- e. [Laticrete International, Inc.](#)
 - f. [MAPEI Corporation.](#)
 - g. [Southern Grouts & Mortars, Inc.](#)
 - h. [Summitville Tiles, Inc.](#)
 - i. [TEC; a subsidiary of H. B. Fuller Company.](#)
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
 3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.4.

2.8 GROUT MATERIALS

A. Polymer-Modified Tile Grout: ANSI A118.7.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. [Boiardi Products; a QEP company.](#)
 - b. [Bonsal American; an Oldcastle company.](#)
 - c. [Bostik, Inc.](#)
 - d. [Jamo Inc.](#)
 - e. [Laticrete International, Inc.](#)
 - f. [MAPEI Corporation.](#)
 - g. [Southern Grouts & Mortars, Inc.](#)
 - h. [Summitville Tiles, Inc.](#)
 - i. [TEC; a subsidiary of H. B. Fuller Company.](#)
2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.
3. Pool Polymer Fortified Grout: Basis of Design: Manufacturer: Laticrete / 254 Platinum / with Permacolor Select Color Kit for custom color.

B. Grout for PregROUTed Tile Sheets: Same product used in factory to pregROUT tile sheets.

2.9 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Section 07 92 00 "Joint Sealants."

1. Sealants shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use primers, backer rods, and sealant accessories recommended by sealant manufacturer.

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

- C. One-Part, Mildew-Resistant Silicone Sealant: ASTM C 920; Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide, intended for sealing interior ceramic tile joints and other nonporous substrates that are subject to in-service exposures of high humidity and extreme temperatures.

1. **Products:** Subject to compliance with requirements, provide one of the following:

- a. [DAP Inc.](#); 100 percent Silicone Kitchen and Bath Sealant.
- b. [Dow Corning Corporation; Dow Corning 786.](#)
- c. [GE Silicones; a division of GE Specialty Materials; Sanitary 1700.](#)
- d. [Laticrete International, Inc.; Lataasil Tile & Stone Sealant.](#)
- e. [Pecora Corporation; Pecora 898 Sanitary Silicone Sealant.](#)
- f. [Tremco Incorporated; Tremsil 600 White.](#)

2.10 MISCELLANEOUS MATERIALS

- A. Trowelable Underlayments and Patching Compounds: Latex-modified, portland cement-based formulation provided or approved by manufacturer of tile-setting materials for installations indicated.

- B. Metal Edge Strips: Angle or L-shape, height to match tile and setting-bed thickness, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.

1. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

- a. Blanke Corporation.
- b. Ceramic Tool Company, Inc.
- c. Schluter Systems L.P.

- C. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar, and grout products; and easily removable after grouting is completed without damaging grout or tile.

1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 deg F per ASTM D 87.
2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.

- D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

- E. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. **Products:** Subject to compliance with requirements, provide one of the following:

- a. [Bonsal American; an Oldcastle company; Grout Sealer.](#)
- b. [Jamo Inc.](#); Penetrating Sealer.
- c. [MAPEI Corporation](#); KER 004, Keraseal Penetrating Sealer for Unglazed Grout and Tile.

- d. [Southern Grouts & Mortars, Inc.; Silicone Grout Sealer.](#)
- e. [Summitville Tiles, Inc.; SL-15, Invisible Seal Penetrating Grout and Tile Sealer.](#)
- f. [TEC](#); a subsidiary of H. B. Fuller Company; TA-256 Penetrating Silicone Grout Sealer.

2.11 MIXING MORTARS AND GROUT

- A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- B. Add materials, water, and additives in accurate proportions.
- C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
 - 1. Verify that substrates for setting tile are firm, dry, clean, free of coatings that are incompatible with tile-setting materials including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
 - 2. Verify that concrete substrates for tile floors installed with thin-set mortar comply with surface finish requirements in ANSI A108.01 for installations indicated.
 - a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
 - b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.
 - 3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
 - 4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Fill cracks, holes, and depressions in concrete substrates for tile floors installed with thin-set mortar with trowelable leveling and patching compound specifically recommended by tile-setting material manufacturer.

- B. Where indicated, prepare substrates to receive waterproofing by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot toward drains.
- C. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.
- D. Field-Applied Temporary Protective Coating: If indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, precoat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.3 TILE INSTALLATION

- A. Comply with TCA's "Handbook for Ceramic Tile Installation" for TCA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 Series "Specifications for Installation of Ceramic Tile" that are referenced in TCA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.
 - 1. For the following installations, follow procedures in the ANSI A108 Series of tile installation standards for providing 95 percent mortar coverage:
 - a. Tile floors in wet areas.
 - b. Tile swimming pool decks.
 - c. Tile floors composed of tiles 8 by 8 inches or larger.
 - d. Tile floors composed of rib-backed tiles.
- B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.
- E. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.
 - 1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
 - 2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
 - 3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
- F. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:
 - 1. Ceramic Mosaic Tile: 1/16 inch.

2. Quarry Tile: 1/4 inch.
3. Paver Tile: 1/4 inch.
4. Glazed Wall Tile: 1/16 inch.
5. Decorative Thin Wall Tile: 1/16 inch.

G. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

H. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.

I. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. Do not extend cleavage membrane, waterproofing, or crack isolation membrane under thresholds set in latex-portland cement mortar. Fill joints between such thresholds and adjoining tile set on cleavage membrane, waterproofing, or crack isolation membrane with elastomeric sealant.

J. Metal Edge Strips: Install where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with or below top of tile and no threshold is indicated.

K. Grout Sealer: Apply grout sealer to cementitious grout joints in tile floors according to grout-sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer and sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL INSTALLATION

A. Install cementitious backer units and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use latex-portland cement mortar for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 WATERPROOFING INSTALLATION

A. Install waterproofing to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness and bonded securely to substrate.

B. Do not install tile or setting materials over waterproofing until waterproofing has cured and been tested to determine that it is watertight.

3.6 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness and bonded securely to substrate.

B. Do not install tile or setting materials over crack isolation membrane until membrane has cured.

3.7 CLEANING AND PROTECTING

- A. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Remove latex-portland cement grout residue from tile as soon as possible.
 - 2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but no sooner than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.
 - 3. Remove temporary protective coating by method recommended by coating manufacturer and that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent drain clogging.
- B. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.
- C. Prohibit foot and wheel traffic from tiled floors for at least seven days after grouting is completed.
- D. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

END OF SECTION 09 30 00

SECTION 09 51 13

ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for ceilings.
- B. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices to be cast in concrete.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, 6 inches in size.
- C. Samples for Verification: For each component indicated and for each exposed finish required, prepared on Samples of size indicated below.
 - 1. Acoustical Panel: Set of 6-inch- square Samples of each type, color, pattern, and texture.
 - 2. Exposed Suspension-System Members, Moldings, and Trim: Set of 6-inch- long Samples of each type, finish, and color.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Acoustical Ceiling Panels: Full-size panels equal to 2 percent of quantity installed.

2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.
- B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.
- B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
 2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL PANELS, GENERAL

- A. Source Limitations:
 1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
 2. Suspension System: Obtain each type from single source from single manufacturer.
- B. Acoustical Panel Standard: Provide manufacturer's standard panels of configuration indicated that comply with ASTM E 1264 classifications as designated by types, patterns, acoustical ratings, and light reflectances unless otherwise indicated.
 1. Mounting Method for Measuring NRC: Type E-400; plenum mounting in which face of test specimen is 15-3/4 inches away from test surface according to ASTM E 795.

- C. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.
1. Where appearance characteristics of acoustical panels are indicated by referencing pattern designations in ASTM E 1264 and not manufacturers' proprietary product designations, provide products selected by Architect from each manufacturer's full range that comply with requirements indicated for type, pattern, color, light reflectance, acoustical performance, edge detail, and size.

2.3 ACOUSTICAL PANELS

- A. Color: White, unless otherwise indicated on Drawings.
- B. Modular Size: As indicated on Drawings.
- C. Broad Spectrum Antimicrobial Fungicide and Bactericide Treatment: Provide acoustical panels treated with manufacturer's standard antimicrobial formulation that inhibits fungus, mold, mildew, and gram-positive and gram-negative bacteria and showing no mold, mildew, or bacterial growth when tested according to ASTM D 3273 and evaluated according to ASTM D 3274 or ASTM G 21.
- D. Tile Types
1. Basis-of-Design: Subject to compliance with requirements, provide product indicated on Drawings or approved product comparable to the following:
 - a. ACT-A1
 - 1) Manufacturer: Armstrong World Industries
 - 2) Dune 1775
 - 3) 2' x 2' Beveled Tegular Edge Ceiling Tile - Best
 - 4) To be used in Suprafine XL 9/16" Grid
 - b. ACT-C1
 - 1) Manufacturer: Armstrong World Industries
 - 2) Cortega 2195
 - 3) 2' x 2' Beveled Tegular Ceiling Tile - Better
 - 4) To be used in Suprafine XL 9/16" Grid
 - c. ACT-D1
 - 1) Manufacturer: Armstrong World Industries
 - 2) Cortega 747
 - 3) 2' x 4' Square Lay-In Ceiling tile
 - 4) To be used in Prelude XL 15/16" Grid
 - d. ACT-F1
 - 1) Manufacturer: Armstrong World Industries
 - 2) Ceramaguard (Fine Fissured) 608
 - 3) 2' x 4' Square Lay-In Ceiling Tile
 - 4) To be used in Prelude XL 15/16" Grid
 - e. ACT-F2
 - 1) Manufacturer: Armstrong World Industries
 - 2) Ceramaguard (Fine Fissured) 607
 - 3) 2' x 2' Square Lay-In Ceiling Tile
 - 4) To be used in Prelude XL 15/16" Grid

- f. ACT-G1
 - 1) Manufacturer: Rulon International
 - 2) Endure Woodgrain Ceiling System 810
 - 3) Class A Fire Rating
 - 4) 7-1/4" x 18' Ceiling Panel w/ 3/4" Reveal
 - 5) To be used with premanufactured splice pieces (8505)
 - 6) To be used with continuous perimeter trim (872)
 - 7) To be used on Endure Carrier (880) / Color: Black
- g. ACT-G2
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Linear Solid Wood Planks – 8176W1
 - 3) To be used with Bioacoustic infil 8200T10 / Color: White
 - 4) To be used in Prelude XL 15/16" Grid / Color: White
- h. ACT-G3
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Linear Veneered Planks – 6440W1
 - 3) 4-1/2" Module
 - 4) To be used with Bioacoustic infil 5823 / Color: Black
 - 5) To be used with continuous 4" Axiom Classic AX4STR / Color: Custom
 - 6) To be used in Prelude XL 15/16" Grid / Color: White
- i. ACT-G4
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Grille 7099BD
 - 3) Length: 96"
 - 4) Nominal Module: 12"
 - 5) Blade Height: 5-3/4"
 - 6) Number of Blades per Panel: 3
 - 7) Blade Thickness: 1-1/4"
 - 8) Slat Color: Grille Walnut (GWN)
 - 9) To be used with Bioacoustic infil 5823 / Color: Black
 - 10) To be used with continuous 16" Axiom Classic AX16STR / Color: Custom
- j. ACT-G5
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Grille 7266BO
 - 3) Length: 96"
 - 4) Nominal Module: 12"
 - 5) Blade Height: 2-1/4"
 - 6) Number of Blades per Panel: 6
 - 7) Blade Thickness: 2-3/4"
 - 8) Slat Color: Grille Walnut (GWN)
 - 9) To be used with Bioacoustic infil 5823 / Color: Black
 - 10) To be used in Prelude XL 15/16" Grid / Color: Black
- k. ACT-G6
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Grille 7099BD
 - 3) Length: 96"
 - 4) Nominal Module: 12"
 - 5) Blade Height: 5-3/4"
 - 6) Number of Blades per Panel: 3
 - 7) Blade Thickness: 1-1/4"
 - 8) Slat Color: Grille Walnut (GWN)

- I. ACT-G7
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Tegular – 5404W4
 - 3) 2' x 2' Square Tegular Ceiling Tile
 - 4) To be used with Bioacoustic infil 5823 / Color: Black
 - 5) 2" Solid border at perimeter of all ceiling tiles
 - 6) To be used in Suprafine HD 9/16" Grid / Color: Black
 - 7) Calla – 2820BK
 - 8) 2' x 2' Square Lay-in Ceiling Tile
 - 9) To be used with Bioacoustic infil 5823 / Color: Black
 - 10) To be used in Prelude XL 15/16" Grid / Color: Black

- m. ACT-G8
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Linear Veneered Planks – 6691W1
 - 3) 6" Planks w/ 1/4" reveal
 - 4) To be used with Bioacoustic infil 5823 / Color: Black
 - 5) To be used in Prelude XL 15/16" Grid / Color: Black

- n. ACT-G9
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Linear Veneered Planks – 6691W1
 - 3) 6" Planks w/ 1/4" reveal
 - 4) To be used with Bioacoustic infil 5823 / Color: Black
 - 5) To be used with continuous 6" Axiom Classic AX6STR / Color: Custom
 - 6) To be used in Prelude XL 15/16" Grid / Color: Black

- o. ACT-G10
 - 1) Manufacturer: Armstrong World Industries
 - 2) Woodworks Linear Solid Wood Planks – 8177W1
 - 3) To be used with Bioacoustic infil 8200T10 / Color: White
 - 4) To be used in Prelude XL 15/16" Grid / Color: White

- p. ACT-K1
 - 1) Manufacturer: Decoustics Saint-Gobain
 - 2) Ceilencio Ceiling System
 - 3) 4' x 4' w/ 1/8" Defined joint
 - 4) 1" Thick acoustical panel
 - 5) Fabric: Guilford of Maine FR701-2100 / Color: White 224
 - 6) To be used in Prelude XL 15/16" Grid / Color: White

2.4 METAL SUSPENSION SYSTEMS, GENERAL

- A. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635/C 635M.
 - 1. High-Humidity Finish: Comply with ASTM C 635/C 635M requirements for "Coating Classification for Severe Environment Performance" where high-humidity finishes are indicated.

- B. Attachment Devices: Size for five times the design load indicated in ASTM C 635/C 635M, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.

1. Anchors in Concrete: Anchors of type and material indicated below, with holes or loops for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to five times that imposed by ceiling construction, as determined by testing according to ASTM E 488 or ASTM E 1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: Postinstalled expansion anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated to comply with ASTM B 633, Class Fe/Zn 5 (0.005 mm) for Class SC 1 service condition.
 - c. Corrosion Protection: Stainless-steel components complying with ASTM F 593 and ASTM F 594, Group 1 Alloy 304 or 316 for bolts; Alloy 304 or 316 for anchor.
 - d. Corrosion Protection: Components fabricated from nickel-copper-alloy rods complying with ASTM B 164 for UNS No. N04400 alloy.
 2. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hangers of type indicated and with capability to sustain, without failure, a load equal to 10 times that imposed by ceiling construction, as determined by testing according to ASTM E 1190, conducted by a qualified testing and inspecting agency.
- C. Wire Hangers, Braces, and Ties: Provide wires complying with the following requirements:
1. Zinc-Coated, Carbon-Steel Wire: ASTM A 641/A 641M, Class 1 zinc coating, soft temper.
 2. Size: Select wire diameter so its stress at three times hanger design load (ASTM C 635/C 635M, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 0.106-inch- diameter wire.
- D. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.
- E. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.
- F. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in place.
- G. Hold-Down Clips: Where indicated, provide manufacturer's standard hold-down clips spaced 24 inches on center on all cross tees.
- 2.5 METAL SUSPENSION SYSTEMS
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. [Armstrong World Industries, Inc.](#)
- B. Metal Suspension System Type 1: Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished 15/16-inch- wide metal caps on flanges.

1. Structural Classification: Intermediate-duty system.
 2. End Condition of Cross Runners: Override (stepped) type.
 3. Face Design: Flat, flush.
 4. Cap Material: Steel cold-rolled sheet.
 5. Cap Finish: Painted white, unless otherwise indicated on Drawings.
- C. Metal Suspension System Type 2: Narrow-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; prepainted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A 653/A 653M, not less than G30 coating designation; with prefinished 9/16-inch- wide metal caps on flanges.
1. Structural Classification: Intermediate-duty system.
 2. End Condition of Cross Runners: Override (stepped) type.
 3. Face Design: Flat, flush.
 4. Cap Material: Steel cold-rolled sheet.
 5. Cap Finish: Painted white, unless otherwise indicated on Drawings.
- D. Metal Suspension System Type 3:
1. Basis-of-Design Product: Subject to compliance with requirements provide Axiom Classic Perimeter Trim; Armstrong World Industries, Inc., as indicated on Drawings.

2.6 METAL EDGE MOLDINGS AND TRIM

- A. Roll-Formed, Sheet-Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
1. Provide manufacturer's standard edge moldings that fit acoustical panel edge details and suspension systems indicated and that match width and configuration of exposed runners unless otherwise indicated.
 2. For lay-in panels with reveal edge details, provide stepped edge molding that forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.
 3. For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

2.7 ACOUSTICAL SEALANT

- A. Products: Subject to compliance with requirements, provide one of the following:
1. Acoustical Sealant for Exposed and Concealed Joints:
 - a. Pecora Corporation; AC-20 FTR Acoustical and Insulation Sealant.
 - b. USG Corporation; SHEETROCK Acoustical Sealant.
 2. Acoustical Sealant for Concealed Joints:
 - a. Henkel Corporation; OSI Pro-Series SC-175 Acoustical Sound Sealant.
 - b. Pecora Corporation; AIS-919.

- c. [Tremco, Inc.](#); Tremco Acoustical Sealant.
- B. Acoustical Sealant: Manufacturer's standard sealant complying with ASTM C 834 and effective in reducing airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E 90.
 - 1. Exposed and Concealed Joints: Nonsag, paintable, nonstaining latex sealant.
 - 2. Concealed Joints: Nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic-rubber sealant.
 - 3. Acoustical sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION – ACOUSTICAL PANELS

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, including structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.
- B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

- A. General: Install acoustical panel ceilings to comply with ASTM C 636/C 636M and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Suspend ceiling hangers from building's structural members and as follows:
 - 1. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum that are not part of supporting structure or of ceiling suspension system.
 - 2. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means.
 - 3. Where width of ducts and other construction within ceiling plenum produces hanger spacings that interfere with location of hangers at spacings required to support standard suspension-system members, install supplemental suspension members and hangers in form of trapezes or equivalent devices.

4. Secure wire hangers to ceiling-suspension members and to supports above with a minimum of three tight turns. Connect hangers directly either to structures or to inserts, eye screws, or other devices that are secure and appropriate for substrate and that will not deteriorate or otherwise fail due to age, corrosion, or elevated temperatures.
 5. Secure flat, angle, channel, and rod hangers to structure, including intermediate framing members, by attaching to inserts, eye screws, or other devices that are secure and appropriate for both the structure to which hangers are attached and the type of hanger involved. Install hangers in a manner that will not cause them to deteriorate or fail due to age, corrosion, or elevated temperatures.
 6. Do not support ceilings directly from permanent metal forms or floor deck. Fasten hangers to cast-in-place hanger inserts, postinstalled mechanical or adhesive anchors, or power-actuated fasteners that extend through forms into concrete.
 7. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 8. Do not attach hangers to steel deck tabs.
 9. Do not attach hangers to steel roof deck. Attach hangers to structural members.
 10. Space hangers not more than 48 inches on center along each member supported directly from hangers unless otherwise indicated; provide hangers not more than 8 inches from ends of each member.
 11. Size supplemental suspension members and hangers to support ceiling loads within performance limits established by referenced standards and publications.
- C. Secure bracing wires to ceiling suspension members and to supports with a minimum of four tight turns. Suspend bracing from building's structural members as required for hangers, without attaching to permanent metal forms, steel deck, or steel deck tabs. Fasten bracing wires into concrete with cast-in-place or postinstalled anchors.
- D. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels.
1. Apply acoustical sealant in a continuous ribbon concealed on back of vertical legs of moldings before they are installed.
 2. Screw attach moldings to substrate at intervals not more than 16 inches on center and not more than 3 inches from ends, leveling with ceiling suspension system to a tolerance of 1/8 inch in 12 feet. Miter corners accurately and connect securely.
 3. Do not use exposed fasteners, including pop rivets, on moldings and trim.
- E. Install suspension-system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- F. Install acoustical panels with undamaged edges and fit accurately into suspension-system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.
1. Arrange directionally patterned acoustical panels as follows:
 - a. As indicated on reflected ceiling plans.
 2. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 3. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

4. For reveal-edged panels on suspension-system members with box-shaped flanges, install panels with reveal surfaces in firm contact with suspension-system surfaces and panel faces flush with bottom face of runners.
5. Paint cut edges of panel remaining exposed after installation; match color of exposed panel surfaces using coating recommended in writing for this purpose by acoustical panel manufacturer.
6. Install hold-down clips in areas indicated, in areas required by authorities having jurisdiction, and for fire-resistance ratings; space as recommended by panel manufacturer's written instructions unless otherwise indicated.
7. Protect lighting fixtures and air ducts to comply with requirements indicated for fire-resistance-rated assembly.

3.4 FIELD QUALITY CONTROL

- A. Special Inspections: Engage a qualified special inspector or testing agency to perform special inspections or to perform tests as required by authorities having jurisdiction.
- B. Perform the following tests and inspections, as required by authorities having jurisdiction, of completed installations of acoustical panel ceiling hangers and anchors and fasteners in successive stages. Do not proceed with installations of acoustical panel ceiling hangers for the next area until test results for previously completed installations show compliance with requirements.
 1. Extent of Each Test Area: When installation of ceiling suspension systems on each floor has reached 20 percent completion but no panels have been installed.
 - a. Within each test area, testing agency will select one of every 10 power-actuated fasteners and postinstalled anchors used to attach hangers to concrete and will test them for 200 lbf of tension; it will also select one of every two postinstalled anchors used to attach bracing wires to concrete and will test them for 440 lbf of tension.
 - b. When testing discovers fasteners and anchors that do not comply with requirements, testing agency will test those anchors not previously tested until 20 pass consecutively and then will resume initial testing frequency.
- C. Acoustical panel ceiling hangers and anchors and fasteners will be considered defective if they do not pass tests and inspections.
- D. Prepare test and inspection reports.

3.5 CLEANING

- A. Clean exposed surfaces of acoustical panel ceilings, including trim, edge moldings, and suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

SECTION 09 64 00

WOOD FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Factory-finished wood flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For each type of floor assembly and accessory. Include plans, elevations, sections, details, and attachments to other work. Include expansion provisions and trim details.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors and finishes available for wood flooring.
- D. Samples for Verification: For each type of wood flooring and accessory, with stain color and finish required, approximately 12 inches long and of same thickness and material indicated for the Work and showing the full range of normal color and texture variations expected.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials described below, before installation begins, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Wood Flooring: Equal to 5 percent of amount installed for each type of wood flooring indicated.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

- B. Hardwood Flooring: Comply with NOFMA's "Official Flooring Grading Rules" for species, grade, and cut.
 - 1. Certification: Provide flooring that carries NOFMA grade stamp on each bundle or piece.
- C. Maple Flooring: Comply with applicable MFMA grading rules for species, grade, and cut.
 - 1. Certification: Provide flooring that carries MFMA mark on each bundle or piece.
- D. Softwood Flooring: Comply with WCLIB No. 17 grading rules for species, grade, and cut.
- E. Build mockup of typical flooring area as shown on Drawings including base and shoe moldings.
 - 1. To set quality standards for sanding and application of field finishes, prepare finish mockup of floor area as shown on Drawings.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver wood flooring materials in unopened cartons or bundles.
- B. Protect wood flooring from exposure to moisture. Do not deliver wood flooring until after concrete, masonry, plaster, ceramic tile, and similar wet work is complete and dry.
- C. Store wood flooring materials in a dry, warm, ventilated, weathertight location.

1.7 PROJECT CONDITIONS

- A. Conditioning period begins not less than seven days before wood flooring installation, is continuous through installation, and continues not less than seven days after wood flooring installation.
 - 1. Environmental Conditioning: Maintain an ambient temperature between 65 and 75 deg F and relative humidity planned for building occupants in spaces to receive wood flooring during the conditioning period.
 - 2. Wood Flooring Conditioning: Move wood flooring into spaces where it will be installed, no later than the beginning of the conditioning period.
 - a. Do not install flooring until it adjusts to relative humidity of, and is at same temperature as, space where it is to be installed.
 - b. Open sealed packages to allow wood flooring to acclimatize immediately on moving flooring into spaces in which it will be installed.
- B. After conditioning period, maintain relative humidity and ambient temperature planned for building occupants.

- C. Install factory-finished wood flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 FACTORY-FINISHED WOOD FLOORING

- A. WF-A1: Engineered-Wood Flooring: HPVA EF, except bonding agent contains no urea formaldehyde.
 - 1. ETX Surfaces
 - 2. Product: Acrylic Impregnated Wood Flooring
 - 3. Species: Maple.
 - 4. Grade: Rustic.
 - 5. Grain: Mixed.
 - 6. Surface Treatment: Smooth.
 - 7. Thickness: 9/16 inch.
 - 8. Face Width: 7 inches.
 - 9. Length: 11" – 84" Random length.
 - 10. Edge Style: Tongue and groove with beveled edges and ends.
 - 11. Finish: Urethane, Matte gloss.

- B. WF-A2: Engineered-Wood Flooring: HPVA EF, except bonding agent contains no urea formaldehyde.
 - 1. Shaw Floors
 - 2. Product: Acrylic Impregnated Wood Flooring
 - 3. Species: Maple.
 - 4. Surface Texture: Heavily scraped.
 - 5. Thickness: 3/8 inch.
 - 6. Face Width: 5 inches.
 - 7. Length: Random length.
 - 8. Edge Style: Pillowed edges and ends.
 - 9. Finish: ScufResist Platinum.

2.2 ACCESSORY MATERIALS

- A. Wood Flooring Adhesive: Mastic recommended by flooring and adhesive manufacturers for application indicated.
 - 1. Adhesive shall have a VOC content of not more than 100 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

- B. Trowelable Leveling and Patching Compound: Latex-modified, hydraulic-cement-based formulation approved by wood flooring manufacturer.

- C. Fasteners: As recommended by manufacturer, but not less than that recommended in NFWA's "Installation Guidelines: Wood Flooring."

- D. Thresholds and Saddles: To match wood flooring. Tapered on each side.

- E. Reducer Strips: To match wood flooring. 2 inches wide, tapered, and in thickness required to match height of flooring.
- F. Cork Expansion Strip: Composition cork strip.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas and conditions, with Installer present, for compliance with requirements for maximum moisture content, installation tolerances, and other conditions affecting performance of wood flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Concrete Slabs: Verify that concrete substrates are dry and moisture-vapor emissions are within acceptable levels according to manufacturer's written instructions.
 - 1. Moisture Testing: Perform tests so that each test area does not exceed 200 sq. ft., and perform no fewer than two tests in each installation area and with test areas evenly spaced in installation areas.
 - a. Perform anhydrous calcium chloride test per ASTM F 1869, as follows:
 - 1) Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.

3.2 PREPARATION

- A. Concrete Slabs: Grind high spots and fill low spots to produce a maximum 1/8-inch deviation in any direction when checked with a 10-foot straight edge.
 - 1. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
- B. Remove coatings, including curing compounds, and other substances on substrates that are incompatible with installation adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- C. Broom or vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

- A. Comply with flooring manufacturer's written installation instructions, but not less than applicable recommendations in NWFA's "Installation Guidelines: Wood Flooring."
- B. Provide expansion space at walls and other obstructions and terminations of flooring as indicated on Drawings.
- C. Engineered-Wood Flooring: Set in adhesive.

3.4 PROTECTION

- A. Protect installed wood flooring during remainder of construction period with covering of heavy kraft paper or other suitable material. Do not use plastic sheet or film that might cause condensation.
 - 1. Do not move heavy and sharp objects directly over kraft-paper-covered wood flooring. Protect flooring with plywood or hardboard panels to prevent damage from storing or moving objects over flooring.

END OF SECTION 09 64 00

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SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Resilient base.
 - 2. Resilient molding accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples: For each exposed product and for each color and texture specified, not less than 12 inches long.
- C. Samples for Verification: For each type of product indicated and for each color, texture, and pattern required in manufacturer's standard-size Samples, but not less than 12 inches long.

1.4 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, of each type, color, pattern, and size of resilient product installed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient products and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F.

1.6 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive resilient products during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 THERMOPLASTIC-RUBBER BASE

- A. **Manufacturers:** Subject to compliance with requirements, provide products indicated in the interior finish schedule.
- B. Product Standard: ASTM F 1861, Type TP (rubber, thermoplastic).
 - 1. Group: I (solid, homogeneous).
 - 2. Style and Location: Cove: Provide in areas with resilient and carpet flooring as indicated in the finish schedule.
- C. Thickness: 0.125 inch.
- D. Height: 4 inches, unless otherwise indicated.
- E. Lengths: Coils in manufacturer's standard length.
- F. Outside Corners: Preformed.
- G. Inside Corners: Job formed.
- H. Colors: As indicated by manufacturer's designations.

2.2 VINYL MOLDING ACCESSORY

- A. **Manufacturers:** As indicated in the interior finish schedule.
- B. Description: Vinyl:
 - 1. Carpet edge for glue-down applications
 - 2. Nosing for carpet
 - 3. Nosing for resilient flooring

4. Reducer strip for resilient flooring
5. Joiner for tile and carpet
6. Transition strips
7. Other design as required for function.

- C. Profile and Dimensions: As indicated.
- D. Locations: Provide vinyl molding accessories in areas indicated and as required.
- E. Colors and Patterns: To match floor covering which is to be confirmed by the interior designer.

2.3 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient-product manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by resilient-product manufacturer for resilient products and substrate conditions indicated.
1. Adhesives shall have a VOC content of 50 g/L or less.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient products.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
1. Installation of resilient products indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.
- B. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- C. Do not install resilient products until they are the same temperature as the space where they are to be installed.

1. At least 48 hours in advance of installation, move resilient products and installation materials into spaces where they will be installed.

D. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient products.

3.3 RESILIENT BASE INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient base.

B. Apply resilient base to walls, columns, pilasters, casework and cabinets in toe spaces, and other permanent fixtures in rooms and areas where base is required.

C. Install resilient base in lengths as long as practical without gaps at seams and with tops of adjacent pieces aligned.

D. Tightly adhere resilient base to substrate throughout length of each piece, with base in continuous contact with horizontal and vertical substrates.

E. Do not stretch resilient base during installation.

F. On masonry surfaces or other similar irregular substrates, fill voids along top edge of resilient base with manufacturer's recommended adhesive filler material.

G. Preformed Corners: Install preformed corners before installing straight pieces.

H. Job-Formed Corners:

1. Inside Corners: Use straight pieces of maximum lengths possible and form with returns not less than 3 inches in length.

a. Miter corners to minimize open joints.

3.4 RESILIENT ACCESSORY INSTALLATION

A. Comply with manufacturer's written instructions for installing resilient accessories.

B. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

A. Comply with manufacturer's written instructions for cleaning and protecting resilient products.

B. Perform the following operations immediately after completing resilient-product installation:

1. Remove adhesive and other blemishes from exposed surfaces.

2. Sweep and vacuum horizontal surfaces thoroughly.

3. Damp-mop horizontal surfaces to remove marks and soil.

- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products subject to wear and foot traffic until Substantial Completion.

END OF SECTION 09 65 13

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SECTION 09 65 16

RESILIENT SHEET FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes vinyl sheet flooring.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: In manufacturer's standard size, but not less than 6-by-9-inch sections of each different color and pattern of resilient sheet flooring required.
 - 1. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches long, of each color required.
- C. Welded-Seam Samples: For seamless-installation technique indicated and for each resilient sheet flooring product, color, and pattern required; with seam running lengthwise and in center of 6-by-9-inch Sample applied to a rigid backing and prepared by Installer for this Project.
- D. Product Schedule: For resilient sheet flooring. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of resilient sheet flooring to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Resilient Sheet Flooring: Furnish not less than 10 linear feet for every 500 linear feet or fraction thereof, in roll form and in full roll width for each type, color, and pattern of flooring installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for resilient sheet flooring installation and seaming method indicated.
 1. Engage an installer who employs workers for this Project who are trained or certified by resilient sheet flooring manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store resilient sheet flooring and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store rolls upright.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 85 deg F, in spaces to receive resilient sheet flooring during the following time periods:
 1. 48 hours before installation.
 2. During installation.
 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during resilient sheet flooring installation.
- D. Close spaces to traffic for 48 hours after resilient sheet flooring installation.
- E. Install resilient sheet flooring after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient sheet flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 UNBACKED VINYL SHEET FLOORING

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings.
- B. Product Standard: ASTM F 1913.
- C. Thickness: As designed per drawing designation.
- D. Wearing Surface: As designed per drawing designation.
- E. Sheet Width: As standard with manufacturer.
- F. Seamless-Installation Method: Heat welded.
- G. Colors and Patterns: As indicated by manufacturer's designations.

2.3 VINYL SHEET FLOORING WITH BACKING

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings.
- B. Product Standard: ASTM F 1303.
- C. Wearing Surface: As designed per drawing designation.
- D. Sheet Width: As standard with manufacturer.
- E. Seamless-Installation Method: Heat welded.
- F. Colors and Patterns: As indicated by manufacturer's designations.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by resilient sheet flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by flooring and adhesive manufacturers to suit resilient sheet flooring and substrate conditions indicated.
 - 1. Adhesives shall have a VOC content of 50 g/L or less.
- C. Seamless-Installation Accessories:
 - 1. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
 - a. Color: Match flooring.
- D. Integral-Flash-Cove-Base Accessories:
 - 1. Cove Strip: 1-inch radius provided or approved by resilient sheet flooring manufacturer.

2. Cap Strip: Square metal, vinyl, or rubber cap provided or approved by resilient sheet flooring manufacturer.
 3. Corners: Metal inside and outside corners and end stops provided or approved by resilient sheet flooring manufacturer.
- E. Floor Polish: Provide protective, liquid floor-polish products recommended by resilient sheet flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of resilient sheet flooring.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to resilient sheet flooring manufacturer's written instructions to ensure adhesion of resilient sheet flooring.
- B. Concrete Substrates: Prepare according to ASTM F 710.
1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by resilient sheet flooring manufacturer. Do not use solvents.
 3. Alkalinity and Adhesion Testing: Perform tests recommended by resilient sheet flooring manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 4. Moisture Testing: Proceed with installation only after substrates pass testing according to resilient sheet flooring manufacturer's written recommendations, but not less stringent than the following:
 - a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.

- D. Do not install resilient sheet flooring until it is the same temperature as the space where it is to be installed.
 - 1. At least 48 hours in advance of installation, move flooring and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient sheet flooring.

3.3 RESILIENT SHEET FLOORING INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient sheet flooring.
- B. Unroll resilient sheet flooring and allow it to stabilize before cutting and fitting.
- C. Lay out resilient sheet flooring as follows:
 - 1. Maintain uniformity of flooring direction.
 - 2. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in flooring substrates.
 - 3. Match edges of flooring for color shading at seams.
 - 4. Avoid cross seams.
- D. Scribe and cut resilient sheet flooring to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, and door frames.
- E. Extend resilient sheet flooring into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on resilient sheet flooring as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Adhere resilient sheet flooring to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- H. Seamless Installation:
 - 1. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and heat weld with welding bead to permanently fuse sections into a seamless flooring. Prepare, weld, and finish seams to produce surfaces flush with adjoining flooring surfaces.
- I. Integral-Flash-Cove Base: Cove resilient sheet flooring 6 inches up vertical surfaces. Support flooring at horizontal and vertical junction with cove strip. Butt at top against cap strip.
 - 1. Install metal corners at inside and outside corners.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting resilient sheet flooring.

- B. Perform the following operations immediately after completing resilient sheet flooring installation:
 - 1. Remove adhesive and other blemishes from surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect resilient sheet flooring from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from flooring surfaces before applying liquid floor polish.
 - 1. Apply one coat(s).
- E. Cover resilient sheet flooring until Substantial Completion.

END OF SECTION 09 65 16

SECTION 09 65 19

RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Solid vinyl floor tile.
 - 2. Vinyl composition floor tile.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: Full-size units of each color and pattern of floor tile required.
- C. Product Schedule: For floor tile. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Floor Tile: Furnish one box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs workers for this Project who are competent in techniques required by manufacturer for floor tile installation and seaming method indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by floor tile manufacturer for installation techniques required.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store floor tile and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.9 FIELD CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 95 deg F, in spaces to receive floor tile during the following time periods:
 - 1. 48 hours before installation.
 - 2. During installation.
 - 3. 48 hours after installation.
- B. After installation and until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 95 deg F.
- C. Close spaces to traffic during floor tile installation.
- D. Close spaces to traffic for 48 hours after floor tile installation.
- E. Install floor tile after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - 1. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

2.2 SOLID VINYL FLOOR TILE (VT-##)

- A. **Products:** Subject to compliance with requirements, provide product indicated on Drawings.
- B. Tile Standard: ASTM F 1700.

1. Class: As indicated by product designations.
2. Type: A, smooth surface.

- C. Thickness: As indicated on Drawings.
- D. Size: As indicated on Drawings.
- E. Colors and Patterns: As indicated by manufacturer's designations.

2.3 VINYL COMPOSITION FLOOR TILE (VCT-##)

- A. **Products:** Subject to compliance with requirements, provide product indicated on Drawings.
- B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.
- C. Wearing Surface: Smooth.
- D. Thickness: 0.125 inch.
- E. Size: As indicated on drawings.
- F. Colors and Patterns: As indicated on drawings.

2.4 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by floor tile manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by floor tile and adhesive manufacturers to suit floor tile and substrate conditions indicated.
1. Adhesives shall comply with the following limits for VOC content:
 - a. Vinyl Composition Tile Adhesives: 50 g/L or less.
- C. Floor Polish: Provide protective, liquid floor-polish products recommended by floor tile manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
1. Verify that finishes of substrates comply with tolerances and other requirements specified in other Sections and that substrates are free of cracks, ridges, depressions, scale, and foreign deposits that might interfere with adhesion of floor tile.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates according to floor tile manufacturer's written instructions to ensure adhesion of resilient products.
- B. Concrete Substrates: Prepare according to ASTM F 710.
 - 1. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - 2. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by floor tile manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by floor tile manufacturer. Proceed with installation only after substrate alkalinity falls within range on pH scale recommended by manufacturer in writing, but not less than 5 or more than 9 pH.
 - 4. Moisture Testing: Proceed with installation only after substrates pass testing according to floor tile manufacturer's written recommendations, but not less stringent than the following:
 - a. Perform anhydrous calcium chloride test according to ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. in 24 hours.
 - b. Perform relative humidity test using in situ probes according to ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound; remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install floor tiles until they are the same temperature as the space where they are to be installed.
 - 1. At least 48 hours in advance of installation, move resilient floor tile and installation materials into spaces where they will be installed.
- E. Immediately before installation, sweep and vacuum clean substrates to be covered by resilient floor tile.

3.3 FLOOR TILE INSTALLATION

- A. Comply with manufacturer's written instructions for installing floor tile.
- B. Lay out floor tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.
 - 1. Lay tiles square with room axis, unless otherwise indicated on Drawings.

- C. Match floor tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Discard broken, cracked, chipped, or deformed tiles.
 - 1. Lay tiles with grain running in one direction, unless otherwise indicated on Drawings.
- D. Scribe, cut, and fit floor tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, and door frames.
- E. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on floor tiles as marked on substrates. Use chalk or other nonpermanent marking device.
- G. Adhere floor tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protecting floor tile.
- B. Perform the following operations immediately after completing floor tile installation:
 - 1. Remove adhesive and other blemishes from exposed surfaces.
 - 2. Sweep and vacuum surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
- C. Protect floor tile from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Floor Polish: Remove soil, adhesive, and blemishes from floor tile surfaces before applying liquid floor polish.
 - 1. Apply one coat(s).
- E. Joint Sealant: Apply sealant to resilient terrazzo floor tile perimeter and around columns, at door frames, and at other joints and penetrations.
- F. Sealers and Finish Coats: Remove soil, visible adhesive, and surface blemishes from resilient terrazzo floor tile surfaces before applying liquid cleaners, sealers, and finish products.
 - 1. Sealer: Apply two base coats of liquid sealer.
 - 2. Finish: Apply two coats of liquid floor finish.
- G. Cover floor tile until Substantial Completion.

END OF SECTION 09 65 19

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SECTION 09 67 23
RESINOUS FLOORING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. Work of this Section, as shown or specified, shall be in accordance with the requirements of the Contract Documents.
- B. Resinous Flooring Types; Urethane Floor Coating and Epoxy Floor Coating

1.2 WORK INCLUDED

- A. Work of this section includes all labor, materials, equipment and services necessary for the complete installation of all area flooring as shown on drawings and/or specified herein.

1.3 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-In- Place Concrete
- B. Division 22 Plumbing: Floor Drains

1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Section 01 60 00 – Product Requirements.
- B. Product Data: Submit manufacturer's technical data, application instructions and general recommendations for waterproof flooring.
- C. Samples for initial selection purposes in form of manufacturer's color charts showing full range of colors available.
 - 1. Submit 2-1/2"x4" samples in color as selected.
- D. Material certificates signed by manufacturer certifying that the waterproof mechanical equipment room flooring complies with requirements specified herein.
- E. Maintenance Instructions: Submit manufacturer's written instructions for recommended maintenance practices.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer or applicator who has specialized in installing resinous flooring types similar to that required for this Project and who is acceptable to manufacturer of primary materials.

- B. Single-Source Responsibility: Obtain waterproof flooring materials, including primers, resins, and finish coats from a single manufacturer.

1.6 DELIVERY STORAGE AND HANDLING

- A. Deliver materials in original packages and containers with seals unbroken and bearing manufacturer's labels containing brand name and directions for storage and mixing with other components.
- B. Store materials to comply with manufacturer's directions to prevent deterioration from moisture, heat, cold, direct sunlight, or other detrimental effects.

1.7 PROJECT CONDITIONS

- A. Environmental Conditions: Comply with epoxy resin composition flooring manufacturer's directions for maintenance of ambient and substrate temperature, moisture, humidity, ventilation, and other conditions required to execute and protect work.
- B. Lighting: Permanent lighting will be in place and working before installing resinous flooring finish(s).

PART 2 - PRODUCTS

2.1 MATERIALS (EPOXY FLOOR COATING: TYPE EXP-1):

- A. Basis of Design Manufacturer: Multi-layered roller applied waterproof flooring surfacing shall be Dur-A-Flex Flooring.
- B. Multi-layered roller applied waterproof flooring surfacing system shall be composed of a primer, broadcast and grout coat, aggregate, topcoat, and shall conform to the following standards:
 - 1. The primer shall consist of a liquid resin and hardener that is mixed at the ratio of 1 parts resin to 4 part hardener per the manufacturer's instructions.
 - 2. The broadcast coat shall be comprised of two components, a resin, and a hardener as supplied by the manufacturer and mixed in the ratio of 2 parts resin to 1 part hardener.
 - 3. The grout coat shall be comprised of liquid components, combined at a ratio of 2 parts resin to 1 part hardener by volume and shall be thoroughly blended by mechanical means such as a high speed paddle mixer.
 - 4. The topcoat shall be comprised of liquid resin, hardner and grit that is mixed per manufacturer's instructions.

2.2 PROPERTIES (EPOXY FLOOR COATING: TYPE EXP-1):

A. Colors: As indicated, or if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

B. Physical Properties:

Provide a flooring system that meets or exceeds the listed minimum physical property requirements when tested according to the referenced standard test method in parentheses.

1. Primer	Dur-A-Glaze #4 WB
a. Percent Solids	56 %
b. VOC	2 g/L
c. Bond Strength to Concrete ASTM D 4541	550 psi, substrates fails
d. Hardness, ASTM D 3363	3H
e. Elongation, ASTM D 2370	9 %
f. Flexibility (1/4: Cylindrical mandrel), ASTM D 1737	Pass
g. Impact Resistance, MIL D-2794	>160
h. Abrasion Resistance ASTM D 4060, CS 17 wheel, 1,000 g Load	30 mg loss
2. Broadcast and Grout Coat	Dur-A-Glaze Shop Floor
a. VOC	7.9 g/L
b. Compressive Strength, ASTM D 695	17,500 psi
c. Tensile Strength, ASTM D 638	4,000 psi
d. Flexural Strength, ASTM D 790	6,250 psi
e. Flexural Modulus of Elasticity, ASTM D 790	6.2 x 10 ⁵
f. Abrasion Resistance, ASTM D 4060 C-10 Wheel, 1,000 gm load, 1,000 cycles	24 mg loss
g. Flame Spread/NFPA-101, ASTM E 84	Class A
h. Flammability, ASTM D 635	Self Extinguishing
i. Indentation, MIL D-3134	0.025 Max
j. Impact Resistance MIL D-3134	Pass
k. Water Absorption. MIL D-24613	0.04%
4. Topcoat	Armor Top
a. Percent Solids	95 %
b. VOC	0 g/L
c. Tensile Strength, ASTM D 2370	7,000 psi
d. Adhesion, ASTM 4541	Substrate Failure
e. Hardness, ASTM D 3363	4H
f. 60° Gloss ASTM D 523	70
g. Abrasion Resistance, ASTM D4060 CS 17 wheel (1,000 g load) 1,000 cycles	Gloss Satin 4 8mg loss with grit 10 12 mg loss without grit
h. Pot Life, 70 F, 50% RH	2 Hours
i. Full Chemical Resistance	7 days

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions where waterproof flooring is to be installed and notify the Architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected by the Contractor in a manner acceptable to the Architect.

3.2 PREPARATION

- A. Substrate: Perform preparation and cleaning procedures according to flooring manufacturer's instructions for particular substrate conditions involved, and as specified. Provide clean, dry, and neutral substrate for flooring application.
- B. Concrete Surfaces: Shot-blast, acid etch or power scarify as required to obtain optimum bond of flooring to concrete. Remove sufficient material to provide a sound surface free laitance, glaze, efflorescence, and any bond-inhibiting curing compounds or form release agents. Remove grease, oil, and other penetrating contaminants. Repair damaged and deteriorated concrete to acceptable condition. Leave surface free of dust, dirt, laitance, and efflorescence.
- C. Materials: Mix materials and prepare materials according to flooring system manufacturer's instructions.

3.3 APPLICATION

- A. General: Apply each component of flooring system according to manufacturer's directions to produce a uniform monolithic flooring surface of thickness indicated.
- B. Cove Base: Apply cove base mix to wall surfaces at locations shown to form cove base height of 4 inches unless otherwise indicated. Follow manufacturer's printed instructions.

3.4 CURING, PROTECTION AND CLEANING

- A. Cure flooring materials according to manufacturer's directions, taking care to prevent contamination during application stages and before completing curing process. Close application area for a minimum of 24 hours.

END OF SECTION 09 67 23

SECTION 09 68 13

TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes modular carpet tile.
- B. Related Requirements:
 - 1. Section 09 65 13 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet tile.
 - 2. Section 09 68 16 "Sheet Carpeting."

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to carpet tile installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include manufacturer's written data on physical characteristics, durability, and fade resistance.
 - 2. Include installation recommendations for each type of substrate.
- B. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.
 - 1. Carpet Tile: Full-size Sample.
 - 2. Exposed Edge, Transition, and Other Accessory Stripping: 12-inch- long Samples.

- C. Product Schedule: For carpet tile. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.
- C. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet tiles to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet tile, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet tile.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet Tile: Full-size units equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Fire-Test-Response Ratings: Where indicated, provide carpet tile identical to those of assemblies tested for fire response according to NFPA 253 by a qualified testing agency.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.

1.10 FIELD CONDITIONS

- A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.
- B. Environmental Limitations: Do not deliver or install carpet tiles until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.

- C. Do not install carpet tiles over concrete slabs until slabs have cured and are sufficiently dry to bond with adhesive and concrete slabs have pH range recommended by carpet tile manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet tiles, install carpet tiles before installing these items.

1.11 WARRANTY

- A. Special Warranty for Carpet Tiles: Manufacturer agrees to repair or replace components of carpet tile installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet tile due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent edge raveling, snags, runs, dimensional stability, excess static discharge, loss of tuft bind strength, loss of face fiber, and delamination.
 - 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET TILE (CPT-C#)

- A. Products: Subject to compliance with requirements, provide product indicated on Drawings.
- B. Color and Pattern: As indicated by manufacturer's designation.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining, pressure-sensitive type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet tile and is recommended by carpet tile manufacturer for releasable installation.
 - 1. Adhesives shall have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet tile performance. Examine carpet tile for type, color, pattern, and potential defects.

- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet tile manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Section 03 30 00 "Cast-in-Place Concrete" for slabs receiving carpet tile.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 6.2, "Site Conditions; Floor Preparation," and with carpet tile manufacturer's written installation instructions for preparing substrates indicated to receive carpet tile installation.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider and protrusions more than 1/32 inch unless more stringent requirements are required by manufacturer's written instructions.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet tile manufacturer.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet tile.

3.3 INSTALLATION

- A. General: Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: Glue down; install every tile with full-spread, releasable, pressure-sensitive adhesive.
- C. Maintain dye lot integrity. Do not mix dye lots in same area.
- D. Cut and fit carpet tile to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet tile manufacturer.
- E. Extend carpet tile into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders.

3.4 CLEANING AND PROTECTION

- A. Perform the following operations immediately after installing carpet tile:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet tile manufacturer.
 - 2. Remove yarns that protrude from carpet tile surface.
 - 3. Vacuum carpet tile using commercial machine with face-beater element.
- B. Protect installed carpet tile to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- C. Protect carpet tile against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet tile manufacturer.

END OF SECTION 09 68 13

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SECTION 09 68 16

SHEET CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Carpet.

- B. Related Requirements:

- 1. Section 09 65 13 "Resilient Base and Accessories" for resilient wall base and accessories installed with carpet.
- 2. Section 09 68 13 "Tile Carpeting."

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

- 1. Review methods and procedures related to carpet installation including, but not limited to, the following:
 - a. Review delivery, storage, and handling procedures.
 - b. Review ambient conditions and ventilation procedures.
 - c. Review subfloor preparation procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following, including installation recommendations for each type of substrate:

- 1. Carpet: For each type indicated. Include manufacturer's written data on physical characteristics, durability, and fade resistance.

- B. Samples: For each of the following products and for each color and texture required. Label each Sample with manufacturer's name, material description, color, pattern, and designation indicated on Drawings and in schedules.

- 1. Carpet: 12-inch- square Sample.
- 2. Carpet Seam: 6-inch Sample.

- C. Product Schedule: For carpet. Use same designations indicated on Drawings.
- D. Seaming Diagram: Provide one diagram per floor showing proposed seam locations, and roll / pattern direction for all carpet types.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Test Reports: For carpet, for tests performed by a qualified testing agency.
- C. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For carpet to include in maintenance manuals. Include the following:
 - 1. Methods for maintaining carpet, including cleaning and stain-removal products and procedures and manufacturer's recommended maintenance schedule.
 - 2. Precautions for cleaning materials and methods that could be detrimental to carpet.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Carpet: Full-width rolls equal to 5 percent of amount installed for each type indicated, but not less than 10 sq. yd.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced Installer who is certified by the International Certified Floorcovering Installers Association at the Commercial II certification level.
- B. Fire-Test-Response Ratings: Where indicated, provide carpet identical to those of assemblies tested for fire response per NFPA 253 by a qualified testing agency.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104.

1.10 FIELD CONDITIONS

- A. Comply with CRI 104 for temperature, humidity, and ventilation limitations.

- B. Environmental Limitations: Do not deliver or install carpet until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- C. Do not install carpet over concrete slabs until slabs have cured, are sufficiently dry to bond with adhesive, and have pH range recommended by carpet manufacturer.
- D. Where demountable partitions or other items are indicated for installation on top of carpet, install carpet before installing these items.

1.11 WARRANTY

- A. Special Warranty for Carpet: Manufacturer agrees to repair or replace components of carpet installation that fail in materials or workmanship within specified warranty period.
 - 1. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse.
 - 2. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, loss of tuft bind strength, excess static discharge, and delamination.
 - 3. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CARPET (CPT-A# & CPT-B#)

- A. Products: Subject to compliance with requirements, provide product(s) indicated on Drawings.
- B. Color and Pattern: As indicated by manufacturer's designation.

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet manufacturer.
- B. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and is recommended or provided by carpet manufacturer.
 - 1. Use adhesives with VOC content not more than 50 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Seam Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for sealing and taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, alkalinity range, installation tolerances, and other conditions affecting carpet performance. Examine carpet for type, color, pattern, and potential defects.
- B. Concrete Subfloors: Verify that concrete slabs comply with ASTM F 710 and the following:
 - 1. Slab substrates are dry and free of curing compounds, sealers, hardeners, and other materials that may interfere with adhesive bond. Determine adhesion and dryness characteristics by performing bond and moisture tests recommended by carpet manufacturer.
 - 2. Subfloor finishes comply with requirements specified in Section 033000 "Cast-in-Place Concrete" for slabs receiving carpet.
 - 3. Subfloors are free of cracks, ridges, depressions, scale, and foreign deposits.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Comply with CRI 104, Section 7.3, "Site Conditions; Floor Preparation," and with carpet manufacturer's written installation instructions for preparing substrates.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, depressions, and protrusions in substrates. Fill or level cracks, holes and depressions 1/8 inch wide or wider, and protrusions more than 1/32 inch, unless more stringent requirements are required by manufacturer's written instructions.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, without using solvents. Use mechanical methods recommended in writing by carpet manufacturer.
- D. Broom and vacuum clean substrates to be covered immediately before installing carpet.

3.3 INSTALLATION

- A. Comply with CRI 104 and carpet manufacturer's written installation instructions for the following:
 - 1. Direct-Glue-Down Installation: Comply with CRI 104, Section 9, "Direct Glue-Down Installation."
 - 2. Stair Installation: Comply with CRI 104, Section 13, "Carpet on Stairs" for glue-down installation.
- B. Comply with carpet manufacturer's written recommendations for seam locations and direction of carpet; maintain uniformity of carpet direction and lay of pile. At doorways, center seams under the door in closed position.

- C. Do not bridge building expansion joints with carpet.
- D. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.
- E. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use nonpermanent, nonstaining marking device.
- G. Install pattern parallel to walls and borders to comply with CRI 104, Section 15, "Patterned Carpet Installations" and with carpet manufacturer's written recommendations.

3.4 CLEANING AND PROTECTING

- A. Perform the following operations immediately after installing carpet:
 - 1. Remove excess adhesive, seam sealer, and other surface blemishes using cleaner recommended by carpet manufacturer.
 - 2. Remove yarns that protrude from carpet surface.
 - 3. Vacuum carpet using commercial machine with face-beater element.
- B. Protect installed carpet to comply with CRI 104, Section 16, "Protecting Indoor Installations."
- C. Protect carpet against damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by carpet manufacturer and carpet adhesive manufacturer.

END OF SECTION 09 68 16

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SECTION 09 72 00

WALL COVERINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Vinyl wall covering.
 - 2. Digital wall covering.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include data on physical characteristics, durability, fade resistance, and fire-test-response characteristics.
- B. Samples for Verification: For each type of wall covering and for each color, pattern, texture, and finish specified, full width by 36-inch- long in size.
 - 1. Wall-Covering Sample: From same production run to be used for the Work. Show complete pattern repeat. Mark top and face of fabric.
 - 2. Wood-Veneer Wall-Covering Sample: From same flitch to be used for the Work, with specified finish applied.
- C. Product Schedule: For wall coverings. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: For each wall covering, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Wall-Covering Materials: For each type, color, texture, and finish, full width by length to equal to 5 percent of amount installed.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install wall coverings until spaces are enclosed and weather tight, wet work in spaces is complete and dry, work above ceilings is complete, and temporary HVAC system is operating and maintaining ambient temperature and humidity conditions at levels intended for occupants after Project completion during the remainder of the construction period.
 - 1. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation.
- B. Lighting: Do not install wall covering until lighting that matches conditions intended for occupants after Project completion is provided on the surfaces to receive wall covering.
- C. Ventilation: Provide continuous ventilation during installation and for not less than the time recommended by wall-covering manufacturer for full drying or curing.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics: As determined by testing identical wall coverings applied with identical adhesives to substrates according to test method indicated below by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.

2.2 VINYL WALL COVERING (WC-B#)

- A. Manufacturers: Subject to compliance with requirements, provide products indicated on Drawings.
- B. Colors, Textures, and Patterns: As indicated on Drawings by manufacturer's designations.

2.3 DIGITAL WALL COVERING (WC-G#)

- A. Manufacturers: Subject to compliance with requirements, provide products indicated on Drawings.
- B. Colors, Textures, and Patterns: As indicated on Drawings by manufacturer's designations.

2.4 ACCESSORIES

- A. Adhesive: Mildew-resistant, non-staining, strippable adhesive, for use with specific wall covering and substrate application indicated and as recommended in writing by wall-covering manufacturer.
 - 1. Adhesive shall have a VOC content of 50 g/L or less.
- B. Primer/Sealer: Mildew resistant, complying with requirements in Section 099123 "Interior Painting" and recommended in writing by primer/sealer and wall-covering manufacturers for intended substrate.
- C. Seam Tape: As recommended in writing by wall-covering manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumbness, maximum moisture content, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair bond of wall covering, including dirt, oil, grease, mold, mildew, and incompatible primers.
- C. Prepare substrates to achieve a smooth, dry, clean, structurally sound surface free of flaking, unsound coatings, cracks, and defects.
 - 1. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
- D. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- E. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.

3.3 WALL-COVERING INSTALLATION

- A. Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated.
- B. Cut wall-covering strips in roll number sequence. Change the roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
 - 1. For solid-color, even-texture, or random-match wall coverings, reverse every other strip.
- D. Install wall covering without lifted or curling edges and without visible shrinkage.
- E. Match pattern 72 inches above the finish floor.
- F. Install seams vertical and plumb at least 6 inches from outside corners and 3 inches from inside corners unless a change of pattern or color exists at corner. Horizontal seams are not permitted.
- G. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without overlaps or gaps between strips.
- H. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.

3.4 CLEANING

- A. Remove excess adhesive at seams, perimeter edges, and adjacent surfaces.
- B. Use cleaning methods recommended in writing by wall-covering manufacturer.
- C. Replace strips that cannot be cleaned.
- D. Reinstall hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.

END OF SECTION 09 72 00

SECTION 09 91 13

EXTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Surface preparation and application of paint systems on the following exterior substrates:
 - a. Fiber-cement board.
 - b. Steel and iron.
 - c. Exposed galvanized metal (steel lintels, exterior hollow metal doors and frames, etc.).
 - d. Plastic.
 - e. Gypsum board.

- B. Related Requirements:

- 1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.

1.3 DEFINITIONS

- A. MPI Gloss Level 1 (Flat): Not more than five units at 60 degrees and 10 units at 85 degrees, according to ASTM D523.
- B. MPI Gloss Level 5 (Semi-Gloss): 35 to 70 units at 60 degrees, according to ASTM D523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include preparation requirements and application instructions.
- 2. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.
- 3. Indicate VOC content in g/L.

- B. Samples for Initial Selection: For each type of topcoat product.

- C. Samples for Verification: For each type of paint system and each color and gloss of topcoat.

- 1. Submit Samples on rigid backing, 8 inches square.

2. Apply coats on Samples in steps to show each coat required for system.
3. Label each coat of each Sample.
4. Label each Sample for location and application area.

- D. Product List: Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in the Exterior Painting Schedule to cross-reference paint systems specified in this Section. Include color designations.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Include color pigmentation formulation.
1. Paint: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 QUALITY ASSURANCE

- A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
1. Apply paint to exposed galvanized metal substrates included in exterior mockup.
 2. Final approval of color selections will be based on mockups.
 - a. If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
1. Maintain containers in clean condition, free of foreign materials and residue.
 2. Remove rags and waste from storage areas daily.

1.8 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints and coatings under environmental conditions outside manufacturer's absolute limits. Do not apply paints in snow, rain, fog, or mist; when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated in Exterior Painting Schedule or comparable product by one of the following:
 - 1. Benjamin Moore & Co.
 - 2. McCormick Paints.
 - 3. PPG Paints.
 - 4. Sherwin-Williams Company (The).
- B. Source Limitations: Obtain paint from single source from single manufacturer.

2.2 PAINT PRODUCTS

- A. MPI Standards: Provide products complying with MPI standards indicated and listed in its "MPI Approved Products List."
- B. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such a procedure is specifically described in manufacturer's product instructions.
- C. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.
- D. VOC Content: Provide paint and coating products that comply with VOC limits of authorities having jurisdiction.
- E. Colors: As selected by Architect from manufacturer's full range.
 - 1. As much as thirty percent of surface area may be painted with deep tones.

2.3 ACCESSORIES

- A. Coating Application Accessories: Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required per manufacturer's specifications.

2.4 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
 - 1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 1. Fiber-Cement Board: 12 percent.
 2. Gypsum Board: 12 percent.
- C. Exterior Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility, with existing finishes and primers.
- E. Do not begin application of coatings until substrates have been properly prepared. Notify Architect of unsatisfactory conditions before proceeding.
- F. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- G. Proceed with coating application only after unsatisfactory conditions have been corrected.
 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Manual" applicable to substrates and paint systems indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

- D. Steel Substrates: Remove rust, loose mill scale, and shop primer if any. Clean using methods recommended in writing by paint manufacturer.
- E. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and areas where shop paint is abraded. Paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints. Clean per SSPC-SP1 using detergent and water or a degreasing cleaner to remove greases and oils. Apply a test area, priming as required. Allow the coating to dry at least one week before testing. If adhesion is poor, Brush Blast per SSPC-SP7 as necessary to remove these treatments.
- G. Plastic Trim Fabrication Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

3.3 INSTALLATION

- A. Apply paints in accordance with manufacturer's written instructions and recommendations in "MPI Manual."
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable items same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed items with prime coat only.
 - 3. Paint both sides and edges of exterior doors and entire exposed surface of exterior door frames.
 - 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 - 5. Primers specified in the Exterior Painting Schedule may be omitted on items that are factory primed or factory finished if compatible with intermediate and topcoat coatings and acceptable to intermediate and topcoat paint manufacturers.
- B. Apply coatings using methods recommended by manufacturer.
- C. Uniformly apply coatings without runs, drips, or sags, without brush marks, and with consistent sheen.
- D. Apply coatings at spreading rate required to achieve the manufacturer's recommended dry film thickness.
- E. Tint undercoats same color as topcoat, but tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Provide sufficient difference in shade of undercoats to distinguish each separate coat.
- F. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- G. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
 - 1. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.

- H. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:
1. Paint the following work where exposed to view:
 - a. Equipment, including panelboards and switch gear.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written instructions, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written instructions.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
1. Do not clean equipment with free-draining water and prevent solvents, thinners, cleaners, and other contaminants from entering into waterways, sanitary and storm drain systems, and ground.
 2. Dispose of contaminants in accordance with requirements of authorities having jurisdiction.
 3. Allow empty paint cans to dry before disposal.
 4. Collect waste paint by type and deliver to recycling or collection facility.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. Protect finished coatings from damage until completion of Project. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

3.6 EXTERIOR PAINTING SCHEDULE

- A. Fiber-Cement Board Substrates:

1. Latex System (Semi-Gloss):
 - a. Latex Prime Coat: Exterior, matching topcoat.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Semigloss Topcoat: Latex, exterior, semigloss (MPI Gloss Level 5), MPI #11.
 - 1) Basis-of-Design Product: Sherwin-Williams Company (The); A-100 Exterior Latex Gloss A08-Series.

- B. Steel and Iron Substrates:
 1. Water-Based Light Industrial Coating System (Semi-Gloss):
 - a. Alkyd Prime Coat: Primer, alkyd, anti-corrosive for metal, MPI #79.
 - 1) Basis-of-Design Product: Sherwin-Williams Company (The); Kem Kromik Universal Metal Primer, B50 Series.
 - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
 - c. Semigloss Topcoat: Light industrial coating, exterior, water based, semigloss (MPI Gloss Level 5), MPI #163.
 - 1) Basis-of-Design Product: Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Semi-Gloss, B66-1150 Series.

- C. Galvanized-Metal Substrates:
 1. Water-Based Light Industrial Coating System (Semi-Gloss):
 - a. Acrylic Prime Coat: Primer, galvanized, water based, MPI #134.
 - 1) Basis-of-Design Product: Sherwin-Williams Company (The); Pro Industrial Pro-Cryl Universal Primer, B66-1300 Series.
 - b. Intermediate Coat: Light industrial coating, exterior, water based, matching topcoat.
 - c. Semigloss Topcoat: Light industrial coating, exterior, water based, semigloss (MPI Gloss Level 5), MPI #163.
 - 1) Basis-of-Design Product: Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Semi-Gloss, B66-1150 Series.

- D. Plastic Trim Fabrication Substrates:
 1. Latex System (Semi-Gloss):
 - a. Water-Based Prime Coat: Primer, bonding, water based, MPI #17.
 - 1) Basis-of-Design Product: Sherwin-Williams Company (The); Multi-Purpose Interior-Exterior Latex Primer-Sealer, B51-450 Series.
 - b. Intermediate Coat: Latex, exterior, matching topcoat.
 - c. Semigloss Topcoat: Latex, exterior, semigloss (MPI Gloss Level 5), MPI #11.

- 1) Basis-of-Design Product: Sherwin-Williams Company (The); A-100 Exterior Latex Gloss A08-Series.

E. Exterior Gypsum Board Substrates:

1. Latex System (Flat):

- a. Prime Coat: Primer, latex for exterior wood (reduced), MPI #6.

- 1) Basis-of-Design Product: Sherwin-Williams Company (The); Multi-Purpose Interior-Exterior Latex Primer-Sealer, B51-450 Series.

- b. Intermediate Coat: Latex, exterior, matching topcoat.

- c. Flat Topcoat: Latex, exterior, flat (MPI Gloss Level 1), MPI #10.

- 1) Basis-of-Design Product: Sherwin-Williams Company (The); A-100 Exterior Latex Flat A06-Series.

END OF SECTION 09 91 13

SECTION 09 91 23

INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and the application of paint systems on the following interior substrates:
 - 1. Concrete.
 - 2. Concrete masonry units (CMU).
 - 3. Steel.
 - 4. Cast iron.
 - 5. Galvanized metal.
 - 6. Aluminum (not anodized or otherwise coated).
 - 7. Wood.
 - 8. Gypsum board.
- B. Related Requirements:
 - 1. Section 05 12 00 "Structural Steel Framing" for shop priming of metal substrates with primers specified in this Section.
 - 2. Section 09 91 13 "Exterior Painting" for surface preparation and the application of paint systems on exterior substrates.
 - 3. Section 09 93 00 "Staining and Transparent Finishing" for surface preparation and the application of wood stains and transparent finishes on interior wood substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 2: Not more than 10 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 3: 10 to 25 units at 60 degrees and 10 to 35 units at 85 degrees, according to ASTM D 523.
- D. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.

- E. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- F. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- G. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of paint system and in each color and gloss of topcoat.
 - 1. Submit Samples on rigid backing, 8 inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- C. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.
 - 2. VOC content.

1.5 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Paint: 3 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
 - 2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.
- B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products indicated on Drawings or comparable product by one of the following:
1. Benjamin Moore & Co.
 2. Sherwin-Williams

2.2 PAINT, GENERAL

- A. Material Compatibility:
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior paints and coatings applied at Project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
1. Flat Paints and Coatings: 50 g/L.
 2. Nonflat Paints and Coatings: 150 g/L.
 3. Primers, Sealers, and Undercoaters: 200 g/L.
 4. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 5. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 6. Pretreatment Wash Primers: 420 g/L.
 7. Shellacs, Clear: 730 g/L.
 8. Shellacs, Pigmented: 550 g/L.
- C. Colors: As indicated on Drawings.

2.3 SOURCE QUALITY CONTROL

- A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 2. Testing agency will perform tests for compliance with product requirements.
 3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12 percent.
 - 2. Masonry (CMU): 12 percent.
 - 3. Wood: 15 percent.
 - 4. Gypsum Board: 12 percent.
- C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- D. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- E. Proceed with coating application only after unsatisfactory conditions have been corrected.
 - 1. Application of coating indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.
- D. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or mortar joints exceed that permitted in manufacturer's written instructions.
- F. Steel Substrates: Remove rust, loose mill scale, and shop primer, if any. Clean using methods recommended in writing by paint manufacturer but not less than the following:

1. SSPC-SP 2, "Hand Tool Cleaning."
 2. SSPC-SP 3, "Power Tool Cleaning."
 3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."
 4. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- G. Shop-Primed Steel Substrates: Clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop priming to comply with SSPC-PA 1 for touching up shop-primed surfaces.
- H. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 2. Sand surfaces that will be exposed to view, and dust off.
 3. Prime edges, ends, faces, undersides, and backsides of wood.
 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
1. Use applicators and techniques suited for paint and substrate indicated.
 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 3. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 4. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
 5. Primers specified in painting schedules may be omitted on items that are factory primed or factory finished if acceptable to topcoat manufacturers.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
- E. Painting Fire Suppression, Plumbing, HVAC, Electrical, Communication, and Electronic Safety and Security Work:

1. Paint the following work where exposed in equipment rooms:
 - a. Equipment, including panelboards and switch gear.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Tanks that do not have factory-applied final finishes.

2. Paint the following work where exposed in occupied spaces:
 - a. Equipment, including panelboards.
 - b. Uninsulated metal piping.
 - c. Uninsulated plastic piping.
 - d. Pipe hangers and supports.
 - e. Metal conduit.
 - f. Plastic conduit.
 - g. Ducts.
 - h. Other items as directed by Architect.

3. Paint portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets that are visible from occupied spaces.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.
 1. Contractor shall touch up and restore painted surfaces damaged by testing.
 2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Concrete Substrates, Nontraffic Surfaces:

1. Latex System:

- a. Prime Coat: Primer sealer, latex, interior.
- b. Prime Coat: Latex, interior, matching topcoat.
- c. Intermediate Coat: Latex, interior, matching topcoat.
- d. Topcoat: Latex, interior, flat, (Gloss Level 1).
- e. Topcoat: Latex, interior, (Gloss Level 2).
- f. Topcoat: Latex, interior, (Gloss Level 3).
- g. Topcoat: Latex, interior, (Gloss Level 4).
- h. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
- i. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).

2. Alkyd System:

- a. Prime Coat: Primer, alkali resistant, water based.
- b. Intermediate Coat: Alkyd, interior, matching topcoat.
- c. Topcoat: Alkyd, interior, flat (Gloss Level 1).
- d. Topcoat: Alkyd, interior, (Gloss Level 3).
- e. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5).
- f. Topcoat: Alkyd, interior, gloss (Gloss Level 6).

B. CMU Substrates:

1. Latex System:

- a. Block Filler: Block filler, latex, interior/exterior.
- b. Intermediate Coat: Latex, interior, matching topcoat.
- c. Topcoat: Latex, interior, (Gloss Level 2).
- d. Topcoat: Latex, interior, (Gloss Level 3).
- e. Topcoat: Latex, interior, (Gloss Level 4).
- f. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
- g. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).

2. Alkyd System:

- a. Block Filler: Block filler, latex, interior/exterior.
- b. Sealer Coat: Primer sealer, latex, interior.
- c. Intermediate Coat: Alkyd, interior, matching topcoat.
- d. Topcoat: Alkyd, interior, (Gloss Level 3).
- e. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5).
- f. Topcoat: Alkyd, interior, gloss (Gloss Level 6).

C. Steel Substrates:

1. Latex over Alkyd Primer System:

- a. Prime Coat: Shop primer specified in Section where substrate is specified.
- b. Intermediate Coat: Latex, interior, matching topcoat.

- c. Topcoat: Latex, interior, (Gloss Level 2).
 - d. Topcoat: Latex, interior, (Gloss Level 3).
 - e. Topcoat: Latex, interior, (Gloss Level 4).
 - f. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
 - g. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).
2. Alkyd System:
- a. Prime Coat: Shop primer specified in Section where substrate is specified.
 - b. Intermediate Coat: Alkyd, interior, matching topcoat.
 - c. Topcoat: Alkyd, interior, (Gloss Level 3).
 - d. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5).
 - e. Topcoat: Alkyd, interior, gloss (Gloss Level 6).
- D. Galvanized-Metal Substrates:
1. Latex over Waterborne Primer System:
- a. Prime Coat: Primer, galvanized, water based.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, (Gloss Level 2).
 - d. Topcoat: Latex, interior, (Gloss Level 3).
 - e. Topcoat: Latex, interior, (Gloss Level 4).
 - f. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
 - g. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).
- E. Aluminum (Not Anodized or Otherwise Coated) Substrates:
1. Latex System:
- a. Prime Coat: Primer, quick dry, for aluminum.
 - b. Intermediate Coat: Latex, interior, matching topcoat.
 - c. Topcoat: Latex, interior, (Gloss Level 2).
 - d. Topcoat: Latex, interior, (Gloss Level 3).
 - e. Topcoat: Latex, interior, (Gloss Level 4).
 - f. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
 - g. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).
2. Alkyd System:
- a. Prime Coat: Primer, vinyl wash.
 - b. Prime Coat: Primer, quick dry, for aluminum.
 - c. Intermediate Coat: Alkyd, interior, matching topcoat.
 - d. Topcoat: Alkyd, interior, (Gloss Level 3).
 - e. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5).
 - f. Topcoat: Alkyd, interior, gloss (Gloss Level 6).
- F. Wood Substrates: Including wood trim and wood-based panel products.
1. Latex System:

- a. Prime Coat: Primer, latex, for interior wood.
- b. Intermediate Coat: Latex, interior, matching topcoat.
- c. Topcoat: Latex, interior, (Gloss Level 2).
- d. Topcoat: Latex, interior, (Gloss Level 3).
- e. Topcoat: Latex, interior, (Gloss Level 4).
- f. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).
- g. Topcoat: Latex, interior, gloss, (Gloss Level 6, except minimum gloss of 65 units at 60 degrees).

2. Alkyd System:

- a. Prime Coat: Primer sealer, alkyd, interior.
- b. Intermediate Coat: Alkyd, interior, matching topcoat.
- c. Topcoat: Alkyd, interior, (Gloss Level 3).
- d. Topcoat: Alkyd, interior, semi-gloss (Gloss Level 5).
- e. Topcoat: Alkyd, interior, gloss (Gloss Level 6).

G. Gypsum Board Substrates:

1. Latex System:

- a. Prime Coat: Primer sealer, latex, interior.
- b. Prime Coat: Latex, interior, matching topcoat.
- c. Intermediate Coat: Latex, interior, matching topcoat.
- d. Topcoat: Latex, interior, flat, (Gloss Level 1).
- e. Topcoat: Latex, interior, (Gloss Level 2).
- f. Topcoat: Latex, interior, (Gloss Level 3).
- g. Topcoat: Latex, interior, (Gloss Level 4).
- h. Topcoat: Latex, interior, semi-gloss, (Gloss Level 5).

END OF SECTION 09 91 23

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SECTION 09 93 00

STAINING AND TRANSPARENT FINISHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes surface preparation and application of wood finishes on the following substrates:
 - 1. Interior Substrates:
 - a. Dressed lumber (finish carpentry).
 - b. Exposed wood panel products.
- B. Related Requirements:
 - 1. Section 09 91 13 "Exterior Painting" for standard paint systems on exterior substrates.
 - 2. Section 09 91 23 "Interior Painting" for standard paint systems on interior substrates.

1.3 DEFINITIONS

- A. Gloss Level 1: Not more than 5 units at 60 degrees and 10 units at 85 degrees, according to ASTM D 523.
- B. Gloss Level 4: 20 to 35 units at 60 degrees and not less than 35 units at 85 degrees, according to ASTM D 523.
- C. Gloss Level 5: 35 to 70 units at 60 degrees, according to ASTM D 523.
- D. Gloss Level 6: 70 to 85 units at 60 degrees, according to ASTM D 523.
- E. Gloss Level 7: More than 85 units at 60 degrees, according to ASTM D 523.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include preparation requirements and application instructions.
- B. Samples for Verification: For each type of finish system and in each color and gloss of finish indicated.

1. Submit Samples on representative samples of actual wood substrates, 8 inches square or 8 inches long.
2. Label each Sample for location and application area.

C. Product List: For each product indicated, include the following:

1. Cross-reference to finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Stains and Transparent Finishes: 5 percent, but not less than 1 gal. of each material and color applied.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F.

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.

1.7 FIELD CONDITIONS

A. Apply finishes only when temperature of surfaces to be finished and ambient air temperatures are between 50 and 95 deg F.

B. Do not apply finishes when relative humidity exceeds 85 percent; at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.

C. Do not apply exterior finishes in snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Sherwin-Williams Company (The).
2. Benjamin Moore & Co.

2.2 MATERIALS, GENERAL

A. Material Compatibility:

1. Provide materials for use within each finish system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a finish system, provide products recommended in writing by manufacturers of topcoat for use in finish system and on substrate indicated.

B. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction and, for interior stains and finishes applied at project site, the following VOC limits, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Clear Wood Finishes, Varnishes: VOC not more than 350 g/L.
2. Shellacs, Clear: VOC not more than 730 g/L.
3. Stains: VOC not more than 250 g/L.

C. Stain Colors: Match Interior Designer's control samples.

2.3 WOOD FILLERS

A. Wood Filler Paste:

1. Sherwin Williams / SHER-WOOD Natural Filler D70T1

2.4 PRIMERS AND SEALERS

A. Alkyd, Sanding Sealer, Clear:

1. Sherwin Williams / Wood Classics FastDry Sanding Sealer

2.5 STAINS

A. Stain, Semi-Transparent, for Interior Wood:

1. Min-Wax or Equal

2.6 POLYURETHANE VARNISHES

A. Varnish, Interior, Polyurethane, Oil-Modified, Satin (Gloss Level 4):

1. Sherwin Williams / Wood Classics / Waterborne Polyurethane Varnish or equal.

B. Varnish, Interior, Polyurethane, Oil-Modified, Gloss (Gloss Level 6):

1. Sherwin Williams / Wood Classics / Waterborne Polyurethane Varnish or equal.

2.7 SOURCE QUALITY CONTROL

- A. Testing of Materials: Owner reserves the right to invoke the following procedure:
1. Owner will engage the services of a qualified testing agency to sample wood finishing materials. Contractor will be notified in advance and may be present when samples are taken. If materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.
 2. Testing agency will perform tests for compliance with product requirements.
 3. Owner may direct Contractor to stop applying wood finishes if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying materials from Project site, pay for testing, and refinish surfaces finished with rejected materials. Contractor will be required to remove rejected materials from previously finished surfaces before refinishing with complying materials if the two finishes are incompatible or produce results that, in the opinion of the Architect and Interior Designer, are aesthetically unacceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.
- B. Maximum Moisture Content of Interior Wood Substrates: 13 percent, when measured with an electronic moisture meter.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Proceed with finish application only after unsatisfactory conditions have been corrected.
1. Beginning finish application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations applicable to substrates indicated.
- B. Remove hardware, covers, plates, and similar items already in place that are removable. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and finishing.
1. After completing finishing operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
- C. Clean and prepare surfaces to be finished according to manufacturer's written instructions for each particular substrate condition and as specified.

1. Remove dust, dirt, oil, and grease by washing with a detergent solution; rinse thoroughly with clean water and allow to dry. Remove grade stamps and pencil marks by sanding lightly. Remove loose wood fibers by brushing.
2. Remove mildew by scrubbing with a commercial wash formulated for mildew removal and as recommended by stain manufacturer.

D. Interior Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Apply wood filler paste to open-grain woods, as defined to produce smooth, glasslike finish.
3. Sand surfaces that will be exposed to view and dust off.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions and recommendations.
1. Use applicators and techniques suited for finish and substrate indicated.
 2. Finish surfaces behind movable equipment and furniture same as similar exposed surfaces.
 3. Do not apply finishes over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Apply finishes to produce surface films without cloudiness, holidays, lap marks, brush marks, runs, ropiness, or other surface imperfections.

3.4 CLEANING AND PROTECTION

- A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
- B. After completing finish application, clean spattered surfaces. Remove spattered materials by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish application. Correct damage by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. At completion of construction activities of other trades, touch up and restore damaged or defaced finished wood surfaces.

3.5 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

- A. Wood substrates, nontraffic surfaces, including wood trim, architectural woodwork, doors, and wood-based panel products.
1. Semitransparent Stain System:

- a. Prime Coat: Stain, semi-transparent, matching topcoat.
 - b. Topcoat: Stain, semi-transparent, for interior wood.
2. Polyurethane Varnish over Stain System:
- a. Stain Coat: Stain, semi-transparent, for interior wood.
 - b. First Intermediate Coat: Polyurethane varnish matching topcoat.
 - c. Second Intermediate Coat: Polyurethane varnish matching topcoat.
 - d. Topcoat: Varnish, interior, polyurethane, oil-modified, satin (Gloss Level 4).
 - e. Topcoat: Varnish, interior, polyurethane, oil-modified, gloss (Gloss Level 6).

END OF SECTION 09 93 00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 10 - SPECIALTIES

10 14 23.16	ROOM-IDENTIFICATION PANEL SIGNAGE
10 14 50	TRAFFIC SIGNAGE AND PAVEMENT MARKINGS
10 14 73	PAINTED SIGNAGE
10 21 13	TOILET COMPARTMENTS
10 26 00	WALL AND DOOR PROTECTION
10 28 00	TOILET, BATH, AND CUSTODIAL ACCESSORIES
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SECTION 10 14 23.16

ROOM-IDENTIFICATION PANEL SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes room-identification signs that are directly attached to the building.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For adhesives, indicate VOC content in g/L.
- B. Shop Drawings: For room-identification signs.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
 - 3. Show message list, typestyles, graphic elements, including raised characters and Braille, and layout for each sign at least half size.
- C. Samples for Initial Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available typestyles and graphic symbols.
- D. Samples for Verification: For each type of sign assembly showing all components and with the required finish(es), in manufacturer's standard size unless otherwise indicated and as follows:
 - 1. Room-Identification Signs: Full-size Sample.
 - 2. Variable Component Materials: Full-size Sample of each base material, character (letter, number, and graphic element) in each exposed color and finish not included in Samples above.
 - 3. Full-size Samples, if approved, will be returned to Contractor for use in Project.
- E. Product Schedule: For room-identification signs. Use same designations indicated on Drawings or specified.

1.5 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials, from the same product run, that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Variable Component Materials: 12 replaceable text inserts and interchangeable characters (letters, numbers, and graphic elements) of each type.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of signs that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Deterioration of finishes beyond normal weathering.
 - b. Deterioration of embedded graphic image.
 - c. Separation or delamination of sheet materials and components.
 - 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.

2.2 ROOM-IDENTIFICATION SIGNS

- A. Room-Identification Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ACE Sign Systems, Inc.
 - b. Advance Corporation.
 - c. Allen Industries Architectural Signage.
 - d. APCO Graphics, Inc.
 - e. ASI Sign Systems, Inc.
 - f. Best Sign Systems, Inc.

- g. Inpro Corporation.
- h. Mohawk Sign Systems.
- i. Poblocki Sign Company, LLC.
- j. Seton Identification Products; a Brady Corporation company.

- 2. Sign-Panel Perimeter: Finish edges smooth.
 - a. Edge Condition: As indicated on Drawings.
 - b. Corner Condition in Elevation: As indicated on Drawings.
- 3. Mounting: Adhesive or two-face tape.
- 4. Text and Typeface: Accessible raised characters and Braille. Finish raised characters to contrast with background color, and finish Braille to match background color.

2.3 SIGN MATERIALS

- A. Acrylic Sheet: ASTM D4802, category as standard with manufacturer for each sign, Type UVF (UV filtering).
- B. Paints and Coatings for Sheet Materials: Inks, dyes, and paints that are recommended by manufacturer for optimum adherence to surface and are UV and water resistant for colors and exposure indicated.

2.4 ACCESSORIES

- A. Adhesive: As recommended by sign manufacturer.
 - 1. Multipurpose construction adhesives shall have a VOC content of 70 g/L or less.
- B. Two-Face Tape: Manufacturer's standard high-bond, foam-core tape, 0.045 inch thick, with adhesive on both sides.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
 - 1. Preassemble signs and assemblies in the shop to greatest extent possible. Disassemble signs and assemblies only as necessary for shipping and handling limitations. Clearly mark units for reassembly and installation; apply markings in locations concealed from view after final assembly.
 - 2. Mill joints to a tight, hairline fit. Form assemblies and joints exposed to weather to resist water penetration and retention.
 - 3. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 - 4. Provide rabbets, lugs, and tabs necessary to assemble components and to attach to existing work. Drill and tap for required fasteners. Use concealed fasteners where possible; use exposed fasteners that match sign finish.
- B. Subsurface-Etched Graphics: Reverse etch back face of clear face-sheet material. Fill resulting copy with manufacturer's standard enamel. Apply opaque manufacturer's standard background color coating over enamel-filled copy.

- C. Signs with Changeable Message Capability: Fabricate signs to allow insertion of changeable messages as follows:
 - 1. For slide-in changeable inserts, fabricate slot without burrs or constrictions that inhibit function. Furnish initial changeable insert. Furnish two blank inserts for each sign for Owner's use.

2.6 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install signs using mounting methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
 - 2. Install signs so they do not protrude or obstruct according to the accessibility standard.
 - 3. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
- B. Accessibility: Install signs in locations on walls as indicated on Drawings and according to the accessibility standard.
- C. Mounting Methods:
 - 1. Adhesive: Clean bond-breaking materials from substrate surface and remove loose debris. Apply linear beads or spots of adhesive symmetrically to back of sign and of suitable quantity to support weight of sign after cure without slippage. Keep adhesive away from edges to prevent adhesive extrusion as sign is applied and to prevent visibility of cured adhesive at sign edges. Place sign in position, and push to engage adhesive. Temporarily support sign in position until adhesive fully sets.
 - 2. Two-Face Tape: Clean bond-breaking materials from substrate surface and remove loose debris. Apply tape strips symmetrically to back of sign and of suitable quantity to support weight of sign without slippage. Keep strips away from edges to prevent visibility at sign edges. Place sign in position, and push to engage tape adhesive.

3.2 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed signs and signs that do not comply with specified requirements. Replace signs with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

- C. On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by Owner.

END OF SECTION 10 14 23.16

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SECTION 10 14 50

TRAFFIC SIGNAGE AND PAVEMENT MARKINGS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Westchester County Health Care Corporation General Conditions and any Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- B. Additional requirements for field engineering also may be described in other Sections of these Specifications.

1.02 DESCRIPTION OF WORK:

- A. The Contractor shall furnish and apply temporary and permanent pavement marking paints, including glass beads thereto, at the locations and in accordance with patterns indicated on the contract drawings or as ordered by the Owner's Representative and in conformance with these Specifications. This work shall apply to all areas of the site.
- B. The Contractor shall furnish and install temporary and permanent traffic signs in accordance with the contract drawings and Specifications or in a manner approved by the Owner's Representative.
- C. The Contractor shall remove and dispose of all temporary signs and support structures upon completion of the work.

1.03 SUBMITTALS:

- A. The Contractor shall submit to the Owner's representative or Construction Manager documentation for material compliance. Three copies shall be submitted for approval.
- B. Fabrication of support structures shall be submitted to the Owner's representative or Construction Manager for approval prior to ordering of materials.

1.04 PRODUCT HANDLING:

- A. Work Included: Protect products scheduled for use in the work by means including, but not necessarily limited to, those described in this Section.
- B. Quality Assurance: Include within the Contractor's quality assurance program such procedures as are required to assure full protection of work and materials.
- C. Manufacturers' Recommendations: Except as otherwise approved by the Owner's Representative, determine and comply with manufacturers' recommendations on product handling, storage and protection.
- D. Repairs and Replacements: In the event of damage, promptly make replacements and repairs to the approval of the Owner's Representative.

1.05 JOB CONDITIONS:

A. General:

1. Before any pavement marking work is begun, a schedule of operations shall be submitted for the approval of the Owner's Representative and/or the Construction Manager. In addition, a schedule of operations for temporary markings and patterns for detours and other temporary traffic controls shall be submitted to and approved by the Owner's Representative and/or the Construction Manager prior to placement.
2. When pavement markings are applied under traffic, the Contractor shall provide all necessary flags, markers, signs, etc., to protect the painted markings until thoroughly dry. The application of pavement markings shall be done in the general direction of traffic; striping against traffic shall not be allowed, unless the area is not in use.
3. The Contractor shall be responsible for removing, to the satisfaction of the Owner's Representative, tracking marks, spilled paint or paint applied in unauthorized areas.

1.06 APPLICABLE CODES:

- A. All pavement markings, traffic control letters, arrows, handicap/accessible symbols and signs shall conform to the Manual of Uniform Traffic Control Devices (latest edition) and materials shall conform to the current Standard Specifications of the New York State Department of Transportation (NYSDOT).

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Pavement Marking Paints

1. White, yellow and blue reflectorized pavement marking paints with glass beads shall be in accordance with New York State Standard Specifications Construction and Materials, latest edition.
2. Paint material and application shall meet or exceed all applicable Federal, State and local regulations as required to perform the work specified herein.

B. Installation of Signs

1. The Contractor shall install signs as shown on the contract drawings and as directed by the Owner's Representative.
2. These signs shall be installed including all necessary hardware on poles, and/or sign posts.
3. Where existing signs are to be removed within a concrete sidewalk, the openings shall be backfilled with sand and compacted to subgrade. If the sidewalk is to remain, a concrete patch similar in color to the existing walk shall be placed and finished with the same texture to that of the surrounding walk. In landscaped areas, the holes shall be filled in with clean soil, lightly compacted, and then seeded.
4. All signs are to provide a minimum clearance of 7'-0" from the grade elevation to bottom of sign unless otherwise indicated.
5. All supports used to secure signs shall be galvanized steel and suitable to support the signs in accordance with the manufacturers' recommendations.
6. All handicapped/accessibility signage shall show symbols of accessibility as per current ADA specifications.

PART 3 - EXECUTION

3.01 PREPARATION:

- A. Refer to Section 31 15 00 – Site Preparation.

3.02 PAVEMENT MARKINGS:

- A. Detour and other temporary markings shall be removed as directed by and to the satisfaction of the Owner's Representative and/or the Construction Manager.

The method of removal is subject to the approval of the Owner's Representative. Painting out pavement markings will only be approved for very short term use. Grinding, scraping, sandblasting, etc., must be conducted in such a manner that the finished pavement surface is not damaged or left in a pattern that will mislead or misdirect the motorist.

When necessary, the Contractor shall establish marking line points at 25-foot intervals throughout the length of the pavement or as directed by the Owner's Representative.

The Contractor shall be responsible for cleaning the pavement to the satisfaction of the Owner's Representative of dust, dirt, old pavement markings, concrete curing compounds and other foreign material which may be detrimental to the adhesion of the paint film.

The paint shall be applied only on thoroughly dry pavement surfaces when the atmosphere temperature is at or above 40°F and when the weather is otherwise favorable in the opinion of the Owner's Representative.

- B. Painted pavement markings shall, unless otherwise noted herein, be applied with atomizing spray type striping machines. The equipment shall be compatible with and suitable for the application of the type of paint being used and shall be approved by the Owner's Representative. Applied markings shall have clean-cut edges, true and smooth alignment and a uniform film thickness of 15±1 mil. Glass beads shall be applied uniformly over and into the wet paint film at a rate of 6 pounds per gallon of paint. Glass bead dispensers shall be of a type that will mechanically and automatically give such performance. All painted pavement markings in roadways shall be topped with glass beads, only parking stall pavement markings are exempt from application of glass beads. Glass beads shall be applied immediately after paint is placed to assure maximum adhesion of glass bead particles to paint surface.
- C. White and yellow reflectorized pavement markings, NYSDOT Item No. 727.01, to be applied in accordance with NYSDOT Standard Specifications Section 685.
 - 1. All stop bars: White
 - 2. All solid lane dividers at intersections: White
 - 3. All arrows and "ONLY" in travel lanes: White
 - 4. Parking lines and spaces: White
 - 5. All at grade handicapped space lines, associated access aisle, and symbols: Blue
 - 6. All double center line lane marking (opposing traffic): Yellow
 - 7. All single lane marking (skip lines-between travel lanes moving in same direction): White
 - 8. All other markings shall be painted markings in accordance with Section B, directly above.Do not apply parking and lane marking paint until layout and placement have been verified with the Owner's representative and/or Construction Manager.

3.03 SIGNS:

- A. All signage as shown on the drawings shall conform to the latest edition of the Manual of Uniform Traffic Control Devices of the NYSDOT Traffic and Safety Division.
- B. All handicapped signage shall show symbols of accessibility as per current ADA Accessibility Guidelines.
- C. Fabrication of all components and erection of the completed sign shall be done in a workmanlike manner and shall produce a finished sign installation to the satisfaction of the Owner's Representative. Holes may be punched or drilled; cut edges shall be smooth and true and free from burrs or ragged breaks. All fabrications except for cutting or lower ends of embedded posts shall be done in the shop except upon express permission of the Owner's Representative.

Overhead panels shall be constructed similarly to ground-mounted sign panels except lock bolts, hex bolts, nuts and washers shall conform to the requirements of Section 715-16 Stainless Steel Connecting Products of the NYSDOT Standard Specifications. Threads on threaded bolts must be burred after tightening to prevent loosening.

- D. Sign locations shown on the contract drawings are approximate and the exact location of each sign will be determined by the Owner's Representative in the field.

END OF SECTION 10 14 50

SECTION 10 14 73

PAINTED SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes wall-identification signs for fire and smoke assemblies as required by authorities having jurisdiction.
- B. Related Requirements:
 - 1. Section 01 50 00 "Temporary Facilities and Controls" for temporary Project identification signs and for temporary information and directional signs.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. For paints and coatings, indicate VOC content in g/L.
- B. Shop Drawings: For painted signs.
 - 1. Show sign locations and mounting heights.
 - 2. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
- C. Samples: For each type of paint, paint system, color, and gloss; minimum 4 inches long in least dimension; on hardboard.
 - 1. Include stepped Samples defining each separate coat, if any. Resubmit until each required sheen, color, and texture is achieved.
 - 2. Include a list of materials for each coat of each Sample.
 - 3. Label each Sample for location and application.

1.4 FIELD CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F.

PART 2 - PRODUCTS

2.1 PAINTED SIGNS

- A. Wall-Identification Sign: Sign applied directly on indicated substrate to identify fire and smoke assemblies, including preparatory treatment as required.
 - 1. Sign Material: Stenciled-on latex or VOC-compliant spray-applied paint or preprinted, self-adhesive decals.
 - 2. Font: Minimum 3 inches high characters in a contrasting color, with minimum 0.375-inch wide strokes.
 - 3. Text: "FIRE AND/OR SMOKE BARRIER - PROTECT ALL OPENINGS."

2.2 PAINT MATERIALS

- A. Sign Paints and Coatings: Inks, dyes, and paints that are recommended in writing by manufacturer for optimum adherence to substrate and are UV and water resistant for colors and exposure indicated.
 - 1. Compatibility: Provide paint materials that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. Transition Coat: Paint manufacturer's recommended coating for use where a residual existing coating is incompatible with the paint system.
- B. VOC Content: For field applications that are inside the weatherproofing system, verify paints and coatings comply with VOC content limits of authorities having jurisdiction and the following VOC content limits:
 - 1. Flat Paints and Coatings: 50 g/L.
 - 2. Nonflat Paints and Coatings: 150 g/L.
 - 3. Dry-Fog Coatings: 400 g/L.
 - 4. Primers, Sealers, and Undercoaters: 200 g/L.
 - 5. Anticorrosive and Antirust Paints Applied to Ferrous Metals: 250 g/L.
 - 6. Zinc-Rich Industrial Maintenance Primers: 340 g/L.
 - 7. Pretreatment Wash Primers: 420 g/L.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance. Comply with paint manufacturer's written instructions for inspection.
- B. If existing surfaces cannot be prepared to an acceptable condition for proper painting, notify Architect in writing.
- C. Proceed with installation only after unsatisfactory conditions have been corrected and surface is dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Appearance Standard: Completed sign work shall have a sharp and uniformly delineated appearance as viewed by Architect from building interior at 10 feet away from painted surface.
- B. Comply with manufacturers' written instructions for surface preparation and paint-application for each substrate condition.
- C. Apply a transition coat over incompatible existing coatings and substrate materials.
- D. Apply primers, sealers, undercoats, and transition coats so that they do not extend beyond the limits of the painted signage. Remove excess without damaging the substrate.
- E. Install signs level, plumb, true to line, with uniform delineation and borders, and at locations and heights indicated.
 - 1. Prespaced characters with template, cutout stencil, or ruler and straightedge.

3.3 MARKING FIRE AND SMOKE ASSEMBLIES

- A. Wall-Identification Signs: Permanently identify both sides of each fire and smoke assembly indicated on Drawings. Place signs in accessible, concealed floor, floor-ceiling, or attic space at maximum 15 feet from end of wall and at maximum intervals of 30 feet, measured horizontally along the assembly. Locate signs for greatest visibility in the space.

3.4 ADJUSTING AND CLEANING

- A. Remove and reapply damaged or deformed signs and signs that do not comply with specified requirements. Reapply signs with damaged or deteriorated finishes that cannot be successfully repaired by finish touchup or similar minor repair procedures.
- B. After completing sign application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.
- D. Remove temporary protective coverings and strippable films as signs are installed.

END OF SECTION 10 14 73

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SECTION 10 21 13

TOILET COMPARTMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Compact Laminate (Solid Phenolic), Moisture Resistant Substrate
 - a. Toilet Partitions

- B. Related Sections:

- 1. Section 05 50 00 "Metal Fabrications" for coordination with overhead supports.
- 2. Section 06 10 00 "Rough Carpentry" for coordination with blocking in walls.
- 3. Section 10 28 00 "Toilet, Bath, and Laundry Accessories".

1.3 ACTION SUBMITTALS

- A. Product Data: For each product to be used. Include the following:

- 1. Construction details and dimensions.
- 2. Preparation instruction and recommendations.
- 3. Storage and handling requirements and recommendations.
- 4. Installation methods.
- 5. Manufacturer's warranty.

- B. Shop Drawings: Submit manufacturer's shop drawings for each product specified. Include the following:

- 1. Plans, elevations, details of construction and attachment to adjacent construction.
- 2. Show anchorage location and accessory items.
- 3. Verify dimensions with field measurements prior to final production of toilet compartments.

- C. Selection Samples: For each finish product specified, three complete sets of color chip representing manufacturer's full range of available colors and patterns.

- D. Verification Samples: For each finish product specified, three samples, minimum size 6 inches square representing actual product, color, and patterns.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum 10 year experience manufacturing similar products.
- B. Source Limitations: For products listed obtain products from single source from single manufacturer.
- C. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.
- B. Handling: Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.8 SEQUENCING

- A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's standard 25 year limited warranty for panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship. Manufacturer's standard 1 year guarantee against defects in material and workmanship for stainless steel door hardware and mounting brackets.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Bobrick Washroom Equipment, Inc.

2.2 COMPACT LAMINATE (SOLID PHENOLIC), MOISTURE RESISTANT SUBSTRATE

- A. Compact Laminate (Solid Phenolic) Toilet Partitions: Bobrick DuralineSeries
1. Mounting Configuration:
 - a. Floor-to-Ceiling Maximum Privacy:
 - 1) Screen Height: 72 inches
 - 2) Floor Clearance: 4-5/16 inches
 - 3) Stile Height: As required
 - b. Post-to-Ceiling Maximum Privacy:
 - 1) Screen Height: 72 inches
 - 2) Floor Clearance: 4-5/16 inches
 - 3) Post Height: Up to 120 inches
 - c. Wall-Hung:
 - 1) Screen Height: 42 inches with 18 inches of floor clearance
 - 2) Screen Height: 48 inches with 12 inches of floor clearance
- B. Materials: Solidly fused plastic laminate with matte-finish melamine surfaces; integrally bonded colored face sheets and black phenolic-resin core.
- C. Color:
1. As indicated on Drawings.
- D. Fire Resistance:
1. National Fire Protection Association / International Building Code Interior Wall and Ceiling Finish: Class A.
 - a. Flame Spread Index (ASTM E 84): 15 for panels and stiles.
 - b. Smoke Developed Index (ASTM E 84): 25 for panels, 20 for stiles
- E. Finished Thickness:
1. Stiles and Doors: $\frac{3}{4}$ inch
 2. Panels and Screens: $\frac{1}{2}$ inch
- F. Stiles: Floor anchored stiles furnished with expansion shields and threaded rods.
1. Leveling Devices: 7 gauge, 3/16 inches thick, corrosion resistant, chromate treated, double zinc plated steel angle leveling bar bolted to stile; furnished with 3/8 inch (10 mm) diameter threaded rods, hex nuts, lock washers, flat washers, spacer sleeves, expansion anchors, and shoe retainers.
 2. Stile Shoes: One-piece, 22 gauge, 18-8, Type 304 stainless steel, 4 inch height; tops with 90 degree return to stile. One-piece shoe capable of adapting to 3/4 inch or 1 inch stile thickness and capable of being fastened (by clip) to stiles starting at wall line.
- G. Wall Posts: Pre-drilled for door hardware, 18-8, Type 304, 16 gauge stainless steel with satin finish; 1 inch x 1-1/2 inches x 58 inches high.
- H. Anchors: Expansion shields and threaded rods at floor connections as applicable. Threaded rods secured to supports above ceiling as applicable. Supports above ceiling furnished and installed as Work of Section 05 50 00.

- I. Hardware:
 1. Compliance: Operating force of less than 5 lb.
 2. Emergency Access: Hinges, latch allow door to be lifted over keeper from outside compartment on inswing doors.
 3. Materials: 18-8, Type 304, heavy-gauge stainless steel with satin finish.
 4. Doorstops: Prevents inswinging doors from swinging out beyond stile; on outswing doors, doorstop prevents door from swinging in beyond stile.
 5. Fastening: Hardware secured to door and stile by through-bolted, theft-resistant, pin-in-head Torx stainless steel machine screws into factory-installed, threaded brass inserts. Fasteners secured directly into core not acceptable.
 - a. Threaded Brass Inserts: Factory-installed; withstand direct pull force exceeding 1500 lb per insert.
 6. Clothes Hooks: Projecting no more than 1-1/8 inch from face of door.
 7. Door Hardware Type
 - a. Standard, commercial hardware.
 - 1) Latching: Track of door latch prevents inswing doors from swinging out beyond stile; on outswing doors, door keeper prevents door from swinging in beyond stile; 16 gauge sliding door latch, 14 gauge keeper.
 - 2) Hinges: Balanced, with field-adjustable cam to permit door to be fully closed or partially open when compartment is unoccupied.
 - 3) Locking: Door locked from inside by sliding door latch into keeper.
 8. Fittings:
 - a. Standard, commercial hardware.
 - 1) Mounting Brackets: Mounted inside compartment; exposed brackets on exterior of compartment not acceptable with the exception of outswing doors.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare substrates including but not limited to blocking and supports in walls and ceilings at points of attachment using methods recommended by the manufacturer for achieving the best result for the substrates under the project conditions.
 1. Inspect areas scheduled to receive compartments for correct dimensions, plumbness of walls, and soundness of surfaces that would affect installation of mounting brackets.
 2. Verify spacing of plumbing fixtures to assure compatibility with installation of compartments.
- B. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.
- C. Do not proceed with installation until substrates have been properly prepared with blocking and supports in walls and ceilings at points of attachment and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

3.2 INSTALLATION

- A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:
 - 1. Verify blocking and supports in walls and ceilings has been installed properly at points of attachment.
 - 2. Verify location does not interfere with door swings or use of fixtures.
 - 3. Use fasteners and anchors suitable for substrate and project conditions.
 - 4. Install units rigid, straight, plumb, and level.
 - 5. Conceal evidence of drilling, cutting, and fitting to room finish.
 - 6. Test for proper operation.

3.3 ADJUSTING AND CLEANING

- A. Adjust hardware for proper operation after installation. Set hinge cam on in-swinging doors to hold doors open when unlatched. Set hinge cam on out-swinging doors to hold unlatched doors in closed position.
- B. Touch-up, repair or replace damaged products.
- C. Clean exposed surfaces of compartments, hardware, and fittings.

END OF SECTION 10 21 13

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SECTION 10 26 00

WALL AND DOOR PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Corner guards.
- 2. Impact-resistant wall coverings.

- B. Related Sections:

- 1. Section 08 71 00 "Door Hardware" for armor, kick, mop, and push plates.

1.3 ACTION SUBMITTALS

- A. Product Data: Include construction details, material descriptions, impact strength, fire-test-response characteristics, dimensions of individual components and profiles, and finishes for each impact-resistant wall protection unit.

- B. Shop Drawings: For each impact-resistant wall protection unit showing locations and extent. Include sections, details, and attachments to other work.

- 1. For installed products indicated to comply with design loads, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

- C. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below. Include Samples of accent strips to verify color selected.

- 1. Wall and Corner Guards: 12 inches long. Include examples of joinery, corners, end caps, top caps, and field splices.
- 2. Impact-Resistant Wall Covering: 6 by 6 inches square.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each impact-resistant plastic material, from manufacturer.

- B. Material Test Reports: For each impact-resistant plastic material.

- C. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each impact-resistant wall protection unit to include in maintenance manuals.
 - 1. Include recommended methods and frequency of maintenance for maintaining optimum condition of plastic covers under anticipated traffic and use conditions. Include precautions against using cleaning materials and methods that may be detrimental to plastic finishes and performance.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Corner-Guard Covers: Full-size plastic covers of maximum length equal to 2 percent of each type, color, and texture of units installed, but no fewer than two, 4-foot- long units.
- B. Include mounting and accessory components. Replacement materials shall be from same production run as installed units.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain impact-resistant wall protection units from single source from single manufacturer.
- B. Product Options: Drawings indicate size, profiles, and dimensional requirements of impact-resistant wall protection units and are based on the specific system indicated. Refer to Section 01 40 00 "Quality Requirements."
- C. Revise subparagraph below to suit Project.
 - 1. Do not modify intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- D. Surface-Burning Characteristics: Provide impact-resistant, plastic wall protection units with surface-burning characteristics as determined by testing identical products per ASTM E 84, NFPA 255, or UL 723 by UL or another qualified testing agency.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store impact-resistant wall protection units in original undamaged packages and containers inside well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1. Maintain room temperature within storage area at not less than 70 deg F during the period plastic materials are stored.
2. Keep plastic sheet material out of direct sunlight.
3. Store plastic wall protection components for a minimum of 72 hours, or until plastic material attains a minimum room temperature of 70 deg F.
 - a. Store corner-guard covers in a vertical position.
 - b. Store wall-guard and handrail covers in a horizontal position.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install impact-resistant wall protection units until building is enclosed and weatherproof, wet work is complete and dry, and HVAC system is operating and maintaining temperature at 70 deg F for not less than 72 hours before beginning installation and for the remainder of the construction period.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of impact-resistant wall protection units that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of plastic and other materials beyond normal use.
 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. PVC Plastic: ASTM D 1784, Class 1, textured, chemical- and stain-resistant, high-impact-resistant PVC or acrylic-modified vinyl plastic with integral color throughout.
 1. Impact Resistance: Minimum 25.4 ft-lbf/in. of notch when tested according to ASTM D 256, Test Method A.
 2. Chemical and Stain Resistance: Tested according to ASTM D 543.
 3. Self-extinguishing when tested according to ASTM D 635.
 4. Flame-Spread Index: 25 or less.
 5. Smoke-Developed Index: 450 or less.
- B. Polycarbonate Plastic Sheet: ASTM D 6098, S-PC01, Class 1 or 2, abrasion resistant; with a minimum impact-resistance rating of 15 ft-lbf/in. of notch when tested according to ASTM D 256, Test Method A.

- C. Aluminum Extrusions: Alloy and temper recommended by manufacturer for type of use and finish indicated, but with not less than strength and durability properties specified in ASTM B 221 for Alloy 6063-T5.
- D. Fasteners: Aluminum, nonmagnetic stainless-steel, or other noncorrosive metal screws, bolts, and other fasteners compatible with items being fastened. Use security-type fasteners where exposed to view.
- E. Adhesive: As recommended by impact-resistant plastic wall protection manufacturer and with a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

2.2 CORNER GUARDS (CG-##)

- A. Surface-Mounted, Resilient, Plastic Corner Guards (CG-A# or CG-B#): Assembly consisting of snap-on plastic cover installed over continuous retainer; including mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.
 - 1. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings.
 - 2. Cover: Extruded rigid plastic, minimum 0.080-inch wall thickness; as follows:
 - a. Profile: Nominal 3-inch long legs and 1/4-inch corner radius.
 - b. Full height, or from top of base to underside of running trim unless noted otherwise.
 - c. Color and Texture: As indicated by manufacturer's designations.
 - 3. Retainer: Minimum 0.070-inch- thick, one-piece rigid vinyl.
 - 4. Retainer Clips: Manufacturer's standard impact-absorbing clips.
 - 5. Top and Bottom Caps: Prefabricated, injection-molded plastic; color matching cover; field adjustable for close alignment with snap-on cover.
- B. Flush-Mounted, Resilient, Stainless-Steel Corner Guards (CG-E): Stainless-Steel angle mounted flush with adjacent wall surface; including screw on mounting hardware; fabricated with 90- or 135-degree turn to match wall condition.
 - 1. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
 - a. [Arden Architectural Specialties, Inc.](#)
 - b. InPro Corporation
 - c. [Balco, Inc.](#)
 - d. [Construction Specialties, Inc.](#)
 - e. [WallGuard.com.](#)
 - 2. Cover: Stainless-Steel, Type 304, minimum 16 ga. wall thickness; as follows:
 - a. Profile: Nominal 1-1/2-inch- long legs and 1/4-inch corner radius.
 - b. Height: As indicated on Drawings.

2.3 IMPACT-RESISTANT WALL COVERINGS

- A. Impact-Resistant Sheet Wall Covering: Fabricated from plastic sheet wall-covering material (FRP-##)
1. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on drawings.
 2. Roll sizes in first subparagraph below are typically available only for 0.040-inch thickness and less.
 3. Size: As indicated.
 4. Sheet Thickness: 0.090 inch, for reinforced fiberglass panels.
 5. Color and Texture: As indicated by manufacturer's designations.
 6. Height: As indicated on Drawings.
 7. Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color.
 8. Mounting: Adhesive.
- B. Impact-Resistant Sheet Wall Covering: Fabricated from plastic sheet wall-covering material (WP-##)
1. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on drawings.
 2. Roll sizes in first subparagraph below are typically available only for 0.060-inch thickness and less.
 3. Size: As indicated.
 4. Sheet Thickness: 0.060 inch, for reinforced fiberglass panels.
 5. Color and Texture: As indicated by manufacturer's designations.
 6. Height: As indicated on Drawings.
 7. Trim and Joint Moldings: Extruded rigid plastic that matches sheet wall covering color.
 8. Mounting: Adhesive.

2.4 FABRICATION

- A. Fabricate impact-resistant wall protection units to comply with requirements indicated for design, dimensions, and member sizes, including thicknesses of components.
- B. Assemble components in factory to greatest extent possible to minimize field assembly. Disassemble only as necessary for shipping and handling.
- C. Fabricate components with tight seams and joints with exposed edges rolled. Provide surfaces free of wrinkles, chips, dents, uneven coloration, and other imperfections. Fabricate members and fittings to produce flush, smooth, and rigid hairline joints.
- D. Miter corners and ends of wood handrails for returns.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and wall areas, with Installer present, for compliance with requirements for installation tolerances, fire rating, and other conditions affecting performance of work.

- B. Examine walls to which impact-resistant wall protection will be attached for blocking, grounds, and other solid backing that have been installed in the locations required for secure attachment of support fasteners.
 - 1. For impact-resistant wall protection units attached with adhesive or foam tape, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Complete finishing operations, including painting, before installing impact-resistant wall protection system components.
- B. Before installation, clean substrate to remove dust, debris, and loose particles.

3.3 INSTALLATION

- A. General: Install impact-resistant wall protection units level, plumb, and true to line without distortions. Do not use materials with chips, cracks, voids, stains, or other defects that might be visible in the finished Work.
 - 1. Install impact-resistant wall protection units in locations and at mounting heights indicated on Drawings.
 - 2. Provide splices, mounting hardware, anchors, and other accessories required for a complete installation.
 - a. Provide anchoring devices to withstand imposed loads.
 - b. Where splices occur in horizontal runs of more than 20 feet, splice aluminum retainers and plastic covers at different locations along the run, but no closer than 12 inches.
 - c. Adjust end and top caps as required to ensure tight seams.
- B. Impact-Resistant Wall Covering: Install top and edge moldings, corners, and divider bars as required for a complete installation.

3.4 CLEANING

- A. Immediately after completion of installation, clean plastic covers and accessories using a standard, ammonia-based, household cleaning agent.
- B. Remove excess adhesive using methods and materials recommended in writing by manufacturer.

END OF SECTION 10 26 00

SECTION 10 28 00

TOILET, BATH, AND CUSTODIAL ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Public-use washroom accessories.
2. Public-use shower room accessories.
3. Private-use bathroom accessories.
4. Healthcare accessories.
5. Underlavatory guards.
6. Custodial accessories.

- B. Related Sections:

1. Section 08 83 00 "Mirrors" for frameless mirrors.
2. Section 09 30 00 "Tiling" for ceramic toilet and bath accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:

1. Construction details and dimensions.
2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Material and finish descriptions.
4. Features that will be included for Project.
5. Manufacturer's warranty.

- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify products using designations indicated.

1.4 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For toilet and bath accessories to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same Part 2 articles, obtain products from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.8 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.031-inch minimum nominal thickness unless otherwise indicated.
- B. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), 0.036-inch minimum nominal thickness.
- C. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 hot-dip zinc coating.
- D. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- E. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- F. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

- G. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.2 PUBLIC-USE WASHROOM ACCESSORIES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. [A & J Washroom Accessories, Inc.](#)
2. [American Specialties, Inc.](#)
3. [Bobrick Washroom Equipment, Inc.](#)
4. [Bradley Corporation.](#)
5. [Delta.](#)

- B. Toilet Tissue (Roll) Dispenser:

1. Basis-of-Design Product: Delta / Model #41350.
2. Description: Toilet paper holder with assist bar.
3. Mounting: Surface mounted with blocking.
4. Operation: Noncontrol delivery with standard spindle.
5. Capacity: Designed for 5-inch- diameter tissue rolls.
6. Material and Finish: Chrome.

- C. Grab Bar:

1. Basis-of-Design Product: Delta / Model #41618, Model #41636, and Model #41642.
2. Mounting: Flanges with concealed fasteners with blocking.
3. Material: Stainless steel, 0.05 inch thick.
 - a. Finish: Chrome.
4. Outside Diameter: 1-1/4 inches.
5. Configuration and Length: As indicated on Drawings.

- D. Sanitary-Napkin Disposal Unit:

1. Basis-of-Design Product: Uline / Model #H3584.
2. Mounting: Floor mounted.
3. Door or Cover: Self-closing, disposal-opening cover.
4. Receptacle: Removable.
5. Material and Finish: Metal – Painted white.

- E. Seat-Cover Dispenser:

1. Basis-of-Design Product: Gamco / Model #TSC-1.
2. Mounting: Surface mounted.
3. Minimum Capacity: 250 seat covers.
4. Exposed Material and Finish: Stainless steel, No. 4 finish (satin).
5. Lockset: Tumbler type.

- F. Robe Hook:

1. Basis-of-Design Product: Delta / Model #73235.

2. Mounting: Surface mounted with blocking.
3. Description: Single-prong unit.
4. Material and Finish: Chrome.

G. Mirror:

1. Basis of Design Product: Product indicated on Drawings.
2. Mounting: Wall mounted with heavy duty concealed interlocking cleat and T-screw, anchor, and plate fasteners
3. Size: Indicated on Drawings
4. Finish: Indicated on Drawings

H. Roll Towel Dispenser / Trash Dispenser

1. Basis-of-Design Product: Bobrick / Model #B-3974-57.
2. Mounting: Recessed.
3. Towel Capacity: Universal Roll 7 ¾" to 8" wide and up to 8" diameter.
4. Waster Capacity: 12 gallon.
5. Material and Finish: Stainless steel.

I. Soap Dispenser

1. Basis-of-Design Product: Gamco / Model #G-64LB.
2. Mounting: Basin mounted.
3. Capacity: 8 ¼" globe – 32 fl. Oz.
4. Material and Finish: Chrome.

2.3 SHOWER ACCESSORIES (NON-RESIDENT ROOM)

A. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. [A & J Washroom Accessories, Inc.](#)
2. [American Specialties, Inc.](#)
3. [Bobrick Washroom Equipment, Inc.](#)
4. [Bradley Corporation.](#)
5. [Delta.](#)

B. Shower Curtain Rod and Rings:

1. Basis-of-Design Product: Bradley / Model #9538-4 with Gatco Fine Bathware / Model #834 (set of 12).
2. Description: 1-inch OD; fabricated from chrome-plated metal.
3. Mounting Flanges: Chrome-plated metal flanges designed for concealed fasteners.
4. Finish: Chrome.

C. Shampoo / Soap Holder:

1. Basis-of-Design Product: Delta / Model #41316.
2. Description: Corner shower shelf.
3. Mounting: Surface with blocking.

4. Material and Finish: Chrome.

D. Mirror:

1. Basis of Design Product: Product indicated on Drawings
2. Mounting: Wall mounted with heavy duty concealed interlocking cleat and T-screw, anchor, and plate fasteners
3. Size: Indicated on Drawings
4. Finish: Indicated on Drawings

E. Towel Bar:

1. Basis-of-Design Product: Delta / Model #41319.
2. Description: Towel bar with assist bar.
3. Mounting: Flanges with concealed fasteners.
4. Length: 24-inches.

2.4 UNDERLAVATORY GUARDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. [Plumberex Specialty Products, Inc.](#)
2. [Truebro by IPS Corporation.](#)

B. Underlavatory Guard:

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevent direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.5 CUSTODIAL ACCESSORIES

- A. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. [A & J Washroom Accessories, Inc.](#)
2. [American Specialties, Inc.](#)
3. [Bobrick Washroom Equipment, Inc.](#)
4. [Bradley Corporation.](#)
5. [GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.](#)

B. Mop and Broom Holder:

1. Basis-of-Design Product: Bobrick Washroom Equipment, Inc.; Model B-224.
2. Description: Unit with shelf, hooks, and holders.
3. Length: 36 inches.
4. Hooks: Three.
5. Mop/Broom Holders: Four, spring-loaded, rubber hat, cam type.
6. Material and Finish: Stainless steel, No. 4 finish (satin).

- a. Shelf: Not less than nominal 0.05-inch- thick stainless steel.

2.6 PRIVATE-USE WASHROOM ACCESSORIES (RESIDENT ROOM)

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. [A & J Washroom Accessories, Inc.](#)
2. [American Specialties, Inc.](#)
3. [Bobrick Washroom Equipment, Inc.](#)
4. [Bradley Corporation.](#)
5. [Delta.](#)

- B. Toilet Tissue (Roll) Dispenser:

1. Basis-of-Design Product: Delta / Model #41350.
2. Description: Toilet paper holder with assist bar.
3. Mounting: Surface mounted with blocking.
4. Operation: Noncontrol delivery with standard spindle.
5. Capacity: Designed for 5-inch- diameter tissue rolls.
6. Material and Finish: Chrome.

- C. Grab Bar:

1. Basis-of-Design Product: Delta / Model #41618, Model #41636, and Model #41642.
2. Mounting: Flanges with concealed fasteners with blocking.
3. Material: Stainless steel, 0.05 inch thick.

- a. Finish: Chrome.

4. Outside Diameter: 1-1/4 inches.
5. Configuration and Length: As indicated on Drawings.

- D. Robe Hook:

1. Basis-of-Design Product: Delta / Model #73235.
2. Mounting: Surface mounted with blocking.
3. Description: Single-prong unit.
4. Material and Finish: Chrome.

- E. Mirror / Medicine Cabinet:

1. Basis of Design Product: Fresca / Model #FMC8059.
2. Mounting: Surface mounted with blocking.
3. Size: 19-1/2" wide x 36" tall x 5" deep.
4. Finish: Anodized aluminum with mirror front.

- F. Towel Ring:

1. Basis-of-Design Product: Delta / Model #73246.
2. Mounting: Surface mounted with blocking.
3. Description: Towel ring.

4. Material and Finish: Chrome.

G. Shower Curtain Rod and Rings:

1. Basis-of-Design Product: Bradley / Model #9538-4 with Gatco Fine Bathware / Model #834 (set of 12).
2. Description: 1-inch OD; fabricated from chrome-plated metal.
3. Mounting Flanges: Chrome-plated metal flanges designed for concealed fasteners.
4. Finish: Chrome.

2.7 SHOWER ACCESSORIES (RESIDENT ROOM)

A. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. [A & J Washroom Accessories, Inc.](#)
2. [American Specialties, Inc.](#)
3. [Bobrick Washroom Equipment, Inc.](#)
4. [Bradley Corporation.](#)
5. [Delta.](#)

A. Shower Curtain Rod and Rings:

1. Basis-of-Design Product: Bradley / Model #9538-4 with Gatco Fine Bathware / Model #834.
2. Description: 1-inch OD; fabricated from chrome-plated metal.
3. Mounting Flanges: Chrome-plated metal flanges designed for concealed fasteners.
4. Finish: Chrome.

B. Shampoo / Soap Holder:

1. Basis-of-Design Product: Delta / Model #41316.
2. Description: Corner shower shelf.
3. Mounting: Surface with blocking.
4. Material and Finish: Chrome.

C. Towel Bar:

1. Basis-of-Design Product: Delta / Model #41319.
2. Description: Towel bar with assist bar.
3. Mounting: Flanges with concealed fasteners.
4. Length: 24-inches.

D. Folding Shower Seat:

1. Basis-of-Design Product: Moen / Model #DN7110.
2. Description: Fold down shower seat
3. Mounting: Surface with blocking.
4. Length: 20-inches.

2.8 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.
- B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of 12 keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 28 00

SECTION 10 31 00

MANUFACTURED FIREPLACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes natural gas fireplace units.
- B. Related Requirements:
 - 1. Division 22 Sections for plumbing for gas service to gas fireplace units.
 - 2. Division 26 Sections for required service to electric fireplace units.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include descriptions, dimensional information, operating characteristics, fittings, accessories, and electrical requirements.
- B. Shop Drawings: Show general layout, assembly, and integration with other work.
 - 1. Include section and details of fireplace unit.
- C. Samples: For fireplace materials and accessories finishes.

1.4 INFORMATIONAL SUBMITTALS

- A. Certification: Verification of current Underwriters Laboratories listing for models provided.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fireplace units to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements:
 - 1. Products shall bear the label of Underwriters Laboratory.
 - 2. Products shall be approved for use in locality having jurisdiction.

3. Provide accessories required to meet local codes.
4. Products shall meet Environmental Protection Agency emission limits.
5. Installation shall be acceptable to local fire jurisdiction.

2.2 PRODUCTS, GENERAL

- A. Source Limitations: Obtain fireplaces as complete unit, including fittings, accessories, and anchorage devices, from single source from single manufacturer.

2.3 INDOOR GAS FIREPLACE UNITS - RESIDENTIAL UNITS

- A. Products: Subject to compliance with requirements, provide the following:
 1. Heat & Glo; Direct Vent Gas Fireplace, Model 6000CLX, with heat out feature.
- B. Compliance: Comply with ANSI Z21.88/CSA 2.33 or Z21.50b/CSA 2.22b and requirements of authorities having jurisdiction.
- C. BTU/Hr. Input: 40,000 (11.7 kW).
- D. Features:
 1. Front and Doors: Chateau Forge.
 2. Interior Panel: As selected by Architect from manufacturer's standard range.
 3. Logs: Seven high-definition logs.
 4. Embers: LED Illuminated embers.
 5. Accent Lighting: LED accent lighting.
 6. Glass: Virtually invisible anti-reflective ceramic.
 7. Facing/Surround: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
 8. Mantel: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
 9. Ignition System: IntelliFire Touch.
 10. Flame Turndown: 50 percent.
 11. Controls:
 - a. IntelliFire Touchscreen Remote Control.
 - b. RC150 wall switch.

2.4 INDOOR GAS FIREPLACE UNITS - COMMON AREAS

- A. Products: Subject to compliance with requirements, provide the following:
 1. Heat & Glo; Direct Vent Gas Fireplace, SlimLine SL-5.
- B. Compliance: Comply with ANSI Z21.88/CSA 2.33 or Z21.50b/CSA 2.22b and requirements of authorities having jurisdiction.
- C. BTU/Hr. Input: 14,900 – 21,000.
- D. Features:

1. Front: Chateau Forge.
2. Interior Panels: Stratford Brick.
3. Controls: WSK-MLT wall switch.
4. IntelliFire Ignition System.
5. LED Ember Bed.
6. Facing/Surround: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
7. Mantel: Bellvue wood mantel.
 - a. Finish: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.

2.5 MISCELLANEOUS MATERIALS

- A. Joint Sealant: Joint sealant complying with requirements in Section 07 92 00 "Joint Sealants."
- B. Accessories: Provide all accessories required to install operating fireplace.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that fireplace is not installed closer than 36 inches to unprotected combustible wall, perpendicular to fireplace openings unless wall shield is installed.
- B. Verify that chimney sections (above starter section) have clearance away from combustible materials in accordance with manufacturer, certified listing, and requirements of applicable building codes.
 1. Install firestop spacers at every ceiling level to ensure necessary clearance.

3.2 INSTALLATION

- A. General:
 1. Install fireplace and accessories in compliance with requirements of the authority having jurisdiction.
 2. Install fireplace units and all accessories where shown and according to Shop Drawings and manufacturer's written instructions.
- B. Install fireplaces in locations indicated with proper clearances.
- C. Coordinate installation with surrounding construction.
- D. Place fireplace in position and starter section of chimney/vent in place on top of fireplace.
- E. Frame work around the fireplace to ensure distance to combustible materials exceeds manufacturer's recommended minimum distance from side and top of opening.
- F. Ensure that mantel is beyond manufacturer's recommended minimum distance from top of fireplace opening.

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END OF SECTION 10 31 00

SECTION 10 44 13

FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes fire-protection cabinets for portable fire extinguishers.
- B. Related Requirements:
 - 1. Section 07 84 13 "Penetration Firestopping" for firestopping sealants installed at perimeter of fire-rated cabinets.
 - 2. Section 10 44 16 "Fire Extinguishers" for portable, hand-carried fire extinguishers accommodated by fire-protection cabinets

1.3 PREINSTALLATION CONFERENCE

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to fire-protection cabinets, including, but not limited to, the following:
 - a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing recessed-, semirecessed-, or surface-mounting method and relationships of box and trim to surrounding construction.
- B. Shop Drawings: For fire-protection cabinets.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
- C. Samples for Initial Selection: For each type of exposed finish required.
- D. Samples for Verification: For each type of exposed finish required, prepared on samples 6 by 6 inches square.

- E. Product Schedule: For fire-protection cabinets. Indicate whether recessed, semirecessed, or surface mounted. Coordinate final fire-protection cabinet schedule with fire-extinguisher schedule to ensure proper fit and function.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-protection cabinets to include in maintenance manuals.

1.6 COORDINATION

- A. Coordinate size of fire-protection cabinets to ensure that type and capacity of fire extinguishers indicated are accommodated.
- B. Coordinate sizes and locations of fire-protection cabinets with wall depths.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain fire-protection cabinets, accessories, and fire extinguishers from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Fire-Protection Cabinets: Listed and labeled to comply with requirements in ASTM E814 for fire-resistance rating of walls where they are installed.

2.3 FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Activar Construction Products Group, Inc. - JL Industries.
 - b. Larsens Manufacturing Company.
 - c. Potter Roemer LLC; a Division of Morris Group International.
- B. Cabinet Construction: Nonrated, except where indicated or where installed in fire-rated wall or partition construction.
 - 1. Fire-Rated Cabinets: Construct fire-rated cabinets with double walls fabricated from 0.043-inch-thick (nominal 18-gage) cold-rolled steel sheet lined with minimum 5/8-inch-thick fire-barrier material. Provide factory-drilled mounting holes.
- C. Cabinet Material: Cold-rolled steel sheet.
- D. Recessed Cabinet:

1. Exposed Flat Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
- E. Semirecessed Cabinet: One-piece combination trim and perimeter door frame overlapping surrounding wall surface, with exposed trim face and wall return at outer edge (backbend).
 1. Rolled-Edge Trim: 2-1/2-inch backbend depth.
- F. Surface-Mounted Cabinet: Cabinet box fully exposed and mounted directly on wall with no trim.
- G. Cabinet Trim Material: Same material and finish as door.
- H. Door Material: Steel sheet.
- I. Door Style: Vertical duo panel with frame.
- J. Door Glazing: Tempered float glass (clear).
- K. Door Hardware: Manufacturer's standard door-operating hardware of proper type for cabinet type, trim style, and door material and style indicated.
 1. Provide projecting door pull and friction latch.
 2. Provide manufacturer's standard hinge, permitting door to open 180 degrees.
- L. Accessories:
 1. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as directed by Architect.
 - a. Identify fire extinguisher in fire-protection cabinet with the words "FIRE EXTINGUISHER."
 - 1) Location: Applied to cabinet door.
 - 2) Application Process: Decals or pressure-sensitive vinyl letters.
 - 3) Lettering Color: Red.
 - 4) Orientation: Vertical.
- M. Materials:
 1. Cold-Rolled Steel: ASTM A1008/A1008M, Commercial Steel (CS), Type B.
 - a. Finish: Baked enamel, TGIC polyester powder coat, HAA polyester powder coat, epoxy powder coat, or polyester/epoxy hybrid powder coat, complying with AAMA 2603.
 - b. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - c. Color: As selected by Architect from manufacturer's full range.
 2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

2.4 FABRICATION

- A. Fire-Protection Cabinets: Provide manufacturer's standard box (tub) with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated.
 - 1. Weld joints and grind smooth.
 - 2. Miter corners and grind smooth.
 - 3. Provide factory-drilled mounting holes.
- B. Cabinet Doors: Fabricate doors according to manufacturer's standards, from materials indicated and coordinated with cabinet types and trim styles.
 - 1. Fabricate door frames with tubular stiles and rails and hollow-metal design, minimum 1/2 inch thick.
 - 2. Miter and weld perimeter door frames and grind smooth.
- C. Cabinet Trim: Fabricate cabinet trim in one piece with corners mitered, welded, and ground smooth.

2.5 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's AMP 500, "Metal Finishes Manual for Architectural and Metal Products," for recommendations for applying and designating finishes.
- B. Protect mechanical finishes on exposed surfaces of fire-protection cabinets from damage by applying a strippable, temporary protective covering before shipping.
- C. Finish fire-protection cabinets after assembly.
- D. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed and semirecessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare recesses for recessed and semirecessed fire-protection cabinets as required by type and size of cabinet and trim style.

3.3 INSTALLATION

- A. General: Install fire-protection cabinets in locations and at mounting heights indicated or, if not indicated, at heights acceptable to authorities having jurisdiction.

- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Unless otherwise indicated, provide recessed fire-protection cabinets. If wall thickness is inadequate for recessed cabinets, provide semirecessed fire-protection cabinets.
- C. Identification: Apply decals or vinyl lettering at locations indicated.

3.4 ADJUSTING AND CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as fire-protection cabinets are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Adjust fire-protection cabinet doors to operate easily without binding. Verify that integral locking devices operate properly.
- C. On completion of fire-protection cabinet installation, clean interior and exterior surfaces as recommended by manufacturer.
- D. Touch up marred finishes, or replace fire-protection cabinets that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by fire-protection cabinet and mounting bracket manufacturers.
- E. Replace fire-protection cabinets that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 10 44 13

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SECTION 10 44 16

FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes portable fire extinguishers for installation in fire-protection cabinets and on mounting brackets for wall-mounted fire extinguishers.
- B. Related Requirements:
 - 1. Section 10 44 13 "Fire Protection Cabinets."

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to fire extinguishers including, but not limited to, the following:
 - a. Schedules and coordination requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include rating and classification, material descriptions, dimensions of individual components and profiles, and finishes for fire extinguisher and mounting brackets.
- B. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function.

1.5 INFORMATIONAL SUBMITTALS

- A. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.

1.7 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure of hydrostatic test according to NFPA 10 when testing interval required by NFPA 10 is within the warranty period.
 - b. Faulty operation of valves or release levers.
 - 2. Warranty Period: Six years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Activar Construction Products Group, Inc. - JL Industries.
 - 2. Larsens Manufacturing Company.
 - 3. Potter Roemer LLC; a Division of Morris Group International.
- B. Source Limitations: Obtain fire extinguishers, fire-protection cabinets, mounting brackets, and accessories, from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."
- B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

2.3 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each fire-protection cabinet and mounting bracket indicated.
 - 1. Valves: Manufacturer's standard.
 - 2. Handles and Levers: Manufacturer's standard.
 - 3. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B, and bar coding for documenting fire-extinguisher location, inspections, maintenance, and recharging.

- B. Wet-Chemical Type: UL-rated 2-A:1-B:C:K, 2.5-gal. nominal capacity, with potassium acetate or potassium citrate-based chemical in stainless-steel container; with pressure-indicating gage.
 - 1. Locations: Install on mounting brackets in kitchens and where indicated on Drawings.
- C. Multipurpose Dry-Chemical Type: UL-rated 4A-80B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.
 - 1. Locations: Install in fire protection cabinets located in corridors and other locations indicated on Drawings.
- D. Carbon Dioxide Type: UL-rated 5-B:C, 5-lb nominal capacity, with carbon dioxide in manufacturer's standard enameled-metal container.
 - 1. Locations: Install on mounting brackets in rooms and spaces with electrical equipment, boiler room, mechanical rooms, electrical rooms, maintenance room, similar back-of-house spaces, and where required by authorities having jurisdiction.

2.4 MOUNTING BRACKETS

- A. Mounting Brackets: Manufacturer's standard steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or black baked-enamel finish.
- B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.
 - 1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fire extinguishers for proper charging and tagging.
 - 1. Remove and replace damaged, defective, or undercharged fire extinguishers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.
 - 1. Mounting Height: 54 inches above finished floor to top of fire extinguisher or at height acceptable to authorities having jurisdiction.

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END OF SECTION 10 44 16

SECTION 10 51 00

WOOD LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Custom wood lockers and accessories.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of wood locker.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of wood locker.
- B. Shop Drawings: For wood lockers.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Show locker trim and accessories, including filler, base and trim.
 - 3. Show locations of built-in soffits or other construction where indicated on drawings.
 - 4. Include elevations for locker identification system and numbering sequence.
- C. Samples for Initial Selection: Manufacturer's wood color samples matching material used for fabrication of lockers, showing the full range of colors available.
- D. Product Schedule: For lockers. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Full-size units of the following wood locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than five (5) units:
 - a. Identification plates.
 - b. Hooks.
 - c. Locks.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver wood lockers until spaces to receive them are clean, dry, and ready for their installation.
- B. Store wood lockers in a dry, ventilated area until ready for installation.
- C. Protect finishes from moisture, soiling, and damage during handling.
- D. Deliver master and control keys and combination control charts to Owner's Representative by registered mail or overnight package service with copy of transmittal to Architect.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that wood lockers can be supported and installed as indicated.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of wood lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation of latches and other door hardware.
 - 2. Damage from deliberate destruction and vandalism is excluded.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain wood lockers, and accessories from single source from single locker manufacturer.
 - 1. Obtain locks from single lock manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Requirements: For lockers indicated to be accessible, comply with applicable provisions of ADA and ICC/ANSI-A117.1, latest adopted versions.

2.3 MATERIALS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Hollman Inc or product by the Architect.
- B. Locker Frame: Tops, sides, and back shall be constructed of 5/8 -inch high density thermo-fused melamine.
 - 1. Expansion / contraction within +/- 1/16 -inch per locker.
- C. Locker Model:
 - 1. Double tier, Model B: 1-Coat Rod, 1-Coat Hook
- D. Visible Edges: Sealed with 1.5 mm PVC edge banding to closely match locker door finish.
- E. Locker Doors:
 - 1. Veneer:
 - a. Door edges sealed with 1.5 mm wood edge banding to closely match wood veneer.
 - b. Flush veneer door A-1 plain sliced wood veneer on 3/4 -inch MDF core.
 - c. Component (5-piece) doors include stiles, rails, and center panel. Stiles and rails are A-1 plain sliced veneer on 3/4 -inch MDF core. All stile and rail joints are doweled and glued.
 - 1) Center Panels:
 - a) Louvered and Raised: A-1 plain sliced veneer on profile panels on MDF core with 3/8 -inch solid wood fixed louvers.
 - 2. Veneer Finish:
 - a. Clear wood surfaces are sealed with 100% solid UV cure sealer (less than 1% VOC).

- b. Wood stains use solvent or water-borne stain. 100% solid UV cure sealer with less than 1% VOC is applied over stain.
 - c. Water based anti-microbial topcoat (11 g/L VOC) applied over cure sealer.
3. Standard Hardware:
- a. Number Disk: 1-1/2 -inch diameter flush mounted disk with 3/8 -inch high contrast digits. US Block 1L font.
 - b. Coat Rod: 1 -inch diameter recessed rod.
 - c. Coat Hook: Two-prong metal hook(s).
 - d. Hinges: Nickel finished, concealed, heavy duty European steel allowing 110 degree opening.
 - 1) 4 hinges per door 60 -inch door and taller.
 - 2) 3 hinges per door 36 -inches – 59 -inches tall.
 - 3) 2 hinges per door 36 -inches and shorter.
4. Locks: Centered vertically in door and spaced horizontally per lock type.
5. Venting: 12 mm openings between door and top and bottom of locker and dividers on multiple opening frames provide continuous natural air flow.

2.4 FABRICATION

- A. Locker shall be fabricated using doweled and glued & nailed assembly process.
- B. Fabricate lockers square, rigid and without warp, with the finished faces flat and free of scratches and chips.
- C. Machine all parts and attachment holes accurately and without chips.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until adjacent substrates and finishes have been properly prepared.
- B. Verify prepared bases are in correct position and configuration.
- C. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Verify adequacy of backing and support framing.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set and secure lockers in place, rigid, plumb, and level.
- C. Use concealed joint fasteners to align and secure adjoining cabinet units.
- D. Conceal screw heads with plastic caps to match locker interior.
- E. Secure lockers with anchor devices to suit substrate materials. Minimum Pullout Force 100 lb.
- F. Install end panels, filler panels, tops and bases as indicated on the approved shop drawings.
- G. Install accessories.

3.4 ADJUSTING

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding. If applicable, verify that integral locking devices operate properly.

3.5 PROTECTION

- A. Protect wood lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- B. Touch up marred finishes, or repair replace wood lockers that cannot be restored to factory-finished appearance before Substantial Completion. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10 51 00

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SECTION 10 51 13

METAL LOCKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Knocked-down lockers.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of metal locker.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of metal locker.
- B. Shop Drawings: For metal lockers.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Show locker trim and accessories, including filler, base and trim.
 - 3. Show locations of built-in soffits or other construction where indicated on drawings.
 - 4. Include elevations for locker identification system and numbering sequence.
- C. Samples for Initial Selection: Manufacturer's metal color samples matching material used for fabrication of lockers, showing the full range of colors available.
- D. Product Schedule: For lockers. Use same designations indicated on Drawings.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For adjusting, repairing, and replacing locker doors and latching mechanisms to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Full-size units of the following metal locker hardware items equal to 10 percent of amount installed for each type and finish installed, but no fewer than five (5) units:
 - a. Identification plates.
 - b. Hooks.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver metal lockers until spaces to receive them are clean, dry, and ready for their installation.
- B. Deliver master and control keys and combination control charts to Owner's Representative by registered mail or overnight package service with copy of transmittal to Architect.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual dimensions of recessed openings by field measurements before fabrication.

1.9 COORDINATION

- A. Coordinate sizes and locations of concrete bases for metal lockers.
- B. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of work specified in other Sections to ensure that metal lockers can be supported and installed as indicated.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of metal lockers that fail in materials or workmanship, excluding finish, within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Faulty operation of latches and other door hardware.
 - 2. Damage from deliberate destruction and vandalism is excluded.
 - 3. Warranty Period for Knocked-Down Metal Lockers: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain metal lockers, and accessories from single source from single locker manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Requirements: For lockers indicated to be accessible, comply with applicable provisions of ADA and ICC/ANSI-A117.1, latest adopted versions.

2.3 KNOCKED-DOWN LOCKERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Republic Storage Systems or comparable product by one of the following:

1. PENCO Products, Inc., Vanguard Series.
2. Hadrian Manufacturing Inc.
3. List Industries Inc.
4. ASI Storage Solutions

- B. Doors: One piece; 2-Tier Z-style fabricated from 16 gauge nominal thickness steel sheet; formed into channel shape with double bend at vertical edges and with right-angle single bend at horizontal edges.

1. Reinforcement: Manufacturer's standard reinforcing angles, channels, or stiffeners for doors more than 15 inches wide; welded to inner face of doors.
2. Stiffeners: Manufacturer's standard full-height stiffener fabricated from 18 gauge nominal thickness steel sheet; welded to inner face of doors.
3. Sound-Dampening Panels: Manufacturer's standard, designed to stiffen doors and reduce sound levels when doors are closed, of die-formed metal with full perimeter flange and sound-dampening material; welded to inner face of doors.
4. Door Style: Vented panel as follows:

- a. Louvered Vents: No fewer than six louver openings at top and bottom for single-tier and three louver openings at top and bottom for double-tier lockers.

- C. Body: Assembled by riveting or bolting body components together. Fabricate from unperforated steel sheet with thicknesses as follows:

1. Tops, Bottoms, and Intermediate Dividers: 24 gauge nominal thickness, with single bend at sides.
2. Backs and Sides: 24 gauge nominal thickness, with full-height, double-flanged connections.
3. Shelves: 24 gauge nominal thickness, with double bend at front and single bend at sides and back.

- D. Frames: Channel formed; fabricated from 16 gauge nominal-thickness steel sheet; lapped and factory welded at corners; with top and bottom main frames factory welded into vertical main frames. Form continuous, integral, full-height door strikes on vertical main frames.
 - 1. Cross Frames between Tiers: Channel formed and fabricated from same material as main frames; welded to vertical main frames.
 - 2. Frame Vents: Fabricate face frames with vents.
- E. Hinges: Welded to door and attached to door frame with no fewer than two factory-installed rivets per hinge that are completely concealed and tamper resistant when door is closed; fabricated to swing 180 degrees.
 - 1. Knuckle Hinges: Steel, full loop, five or seven knuckles, tight pin; minimum 2 inches high.
 - a. Doors over 48 inches high: Three hinges.
 - b. Doors over 24 inches wide: Four hinges.
 - c. All other doors: Two hinges.
- F. Recessed Door Handle and Latch: Stainless-steel cup with integral door pull, recessed so locking device does not protrude beyond door face; pry and vandal resistant.
 - 1. Multipoint Latching: Finger-lift latch control designed for use with built-in combination locks, built-in key locks, or padlocks; positive automatic latching and pre-locking.
 - a. Latch Hooks: Equip doors 48 inches and higher with three latch hooks and doors less than 48 inches high with two latch hooks; fabricated from 12 gauge nominal-thickness steel sheet; welded or riveted to full-height door strikes; with resilient silencer on each latch hook.
 - b. Latching Mechanism: Manufacturer's standard, rattle-free latching mechanism and moving components isolated to prevent metal-to-metal contact, and incorporating a pre-locking device that allows locker door to be locked while door is open and then closed without unlocking or damaging lock or latching mechanism.
 - 2. Single-Point Latching: Nonmoving latch hook designed to engage bolt of built-in combination or cylinder lock.
 - a. Latch Hook: Equip each door with one latch hook, fabricated from 12 gauge nominal-thickness steel sheet; welded midway up full-height door strike; with resilient silencer.
- G. Door Handle and Latch for Lockers: Stainless-steel strike plate with integral pull; with steel padlock loop that projects through metal locker door.
- H. Locks: Built-in hasp bar for padlock.
- I. Identification Plates: Manufacturer's standard, etched, embossed, or stamped aluminum plates, with numbers and/or letters at least ½" inch high.
- J. Hooks: Manufacturer's standard ball-pointed type hooks, aluminum or steel; zinc plated.
- K. Continuous Sloping Tops: Fabricated from manufacturer's standard thickness, but not less than 20 gauge nominal-thickness steel sheet.

1. Closures: Vertical end type.
2. Sloping-top corner fillers, mitered.

L. Individual Sloping Tops: Fabricated from 24 gauge nominal-thickness steel sheet.

M. Recess Trim: Fabricated from 18 gauge nominal-thickness steel sheet.

N. Filler Panels: Fabricated from manufacturer's standard thickness, but not less than 20 gauge nominal-thickness steel sheet.

O. Finished End Panels: Fabricated from 16 gauge nominal-thickness steel sheet.

P. Center Dividers: Fabricated from 24 gauge nominal-thickness steel sheet.

Q. Materials:

1. Cold-Rolled Steel Sheet: ASTM A 1008, Commercial Steel (CS), Type B, suitable for exposed applications.

R. Finish: Baked enamel or powder coat.

1. Color: As selected by Architect from manufacturer's full range; Two colors, with door one color and frame and body another color; as selected by Architect from manufacturer's full range.

2.4 LOCKS

A. Built-in Locks: Built-in padlock eye for use with 9/32-inch diameter padlock shackle.

2.5 FABRICATION

A. Fabricate metal lockers square, rigid, without warp, and with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch and free of sharp edges and burrs.

1. Form body panels, doors, shelves, and accessories from one-piece steel sheet unless otherwise indicated.
2. Provide fasteners, filler plates, supports, clips, and closures as required for complete installation.

B. Fabricate each metal locker with an individual door and frame; individual top, bottom, and back; and common intermediate uprights separating compartments. Factory weld frame members of each metal locker together to form a rigid, one-piece assembly.

C. Equipment: Provide each locker with the following equipment:

1. Double-Tier Units: One double-prong ceiling hook and two single-prong wall hooks.
2. Coat Rods: As indicated on Drawings.
3. Number Plates: One polished aluminum number plate, 2-1/4 inches wide by 1 inch high with black numerals not less than 3/8 inch high; attach to face of door with two aluminum rivets.
4. Closed Bases: 18 gauge closed metal front and end bases, fished to match lockers.

5. Continuous Sloped Hoods: 18 gauge steel, slope rise equal to 1/3 of the locker depth, plus 1 inch vertical rise at front.
 - a. Supplied in 72 inch lengths only.
 - b. Slip joints without visible fasteners at splice locations.
 - c. Provide necessary end closers.
 - d. Finish to match lockers.
 - D. Knocked-Down Construction: Fabricate metal lockers using nuts, bolts, screws, or rivets for nominal assembly at Project site.
 - E. Welded Construction: Factory preassemble metal lockers by welding all joints, seams, and connections; with no bolts, nuts, screws, or rivets used in assembly of main locker groups. Factory weld main locker groups into one-piece structures. Grind exposed welds flush.
 - F. Accessible Lockers: Fabricate as follows:
 1. Locate bottom shelf no lower than 15 inches above the floor.
 2. Where hooks, coat rods, or additional shelves are provided, locate no higher than 48 inches above the floor.
 - G. Continuous Base: Formed into channel or zee profile for stiffness, and fabricated in lengths as long as practical to enclose base and base ends of metal lockers; finished to match lockers.
 - H. Continuous Sloping Tops: Fabricated in lengths as long as practical, without visible fasteners at splice locations; finished to match lockers.
 1. Sloping-top corner fillers, mitered.
 - I. Recess Trim: Fabricated with minimum 2-1/2-inch face width and in lengths as long as practical; finished to match lockers.
 - J. Filler Panels: Fabricated in an unequal leg angle shape; finished to match lockers. Provide slip-joint filler angle formed to receive filler panel.
 - K. Boxed End Panels: Fabricated with 1-inch wide edge dimension, and designed for concealing fasteners and holes at exposed ends of non-recessed metal lockers; finished to match lockers.
 1. Provide one-piece panels for double-row (back-to-back) locker ends.
 - L. Finished End Panels: Designed for concealing unused penetrations and fasteners, except for perimeter fasteners, at exposed ends of non-recessed metal lockers; finished to match lockers.
 1. Provide one-piece panels for double-row (back-to-back) locker ends.
 - M. Center Dividers: Full-depth, vertical partitions between bottom and shelf; finished to match lockers.
- 2.6 ACCESSORIES
- A. Fasteners: Zinc- or nickel-plated steel, slotless-type, exposed bolt heads; with self-locking nuts or lock washers for nuts on moving parts.

- B. Anchors: Material, type, and size required for secure anchorage to each substrate.
 - 1. Provide nonferrous-metal or hot-dip galvanized anchors and inserts on inside face of exterior walls for corrosion resistance.
 - 2. Provide toothed-steel or lead expansion sleeves for drilled-in-place anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls, floors, and support bases, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Install lockers level, plumb, and true; shim as required, using concealed shims.
 - 1. Anchor locker runs at ends and at intervals recommended by manufacturer, but not more than 36 inches o.c. Using concealed fasteners, install anchors through backup reinforcing plates, channels, or blocking as required to prevent metal distortion.
 - 2. Anchor single rows of metal lockers to walls near top and bottom of lockers. Anchor to floors only where locker bases are provided.
 - 3. Anchor back-to-back metal lockers to floor.
- B. Knocked-Down Lockers: Assemble with standard fasteners, with no exposed fasteners on door faces or face frames.
- C. Equipment:
 - 1. Attach hooks with at least two fasteners.
 - 2. Attach door locks on doors using security-type fasteners.
 - 3. Identification Plates: Identify metal lockers with identification to be coordinated with Owner.
 - a. Attach plates to each locker door, near top, centered, with at least two aluminum rivets.
 - b. Attach plates to upper shelf of each open-front metal locker, centered, with a least two aluminum rivets.
- D. Trim: Fit exposed connections of trim, fillers, and closures accurately together to form tight, hairline joints, with concealed fasteners and splice plates.
 - 1. Attach recess trim to recessed metal lockers with concealed clips.
 - 2. Attach filler panels with concealed fasteners. Locate filler panels where indicated on Drawings.
 - 3. Attach sloping-top units to metal lockers, with closures at exposed ends.

4. Attach boxed end panels using concealed fasteners to conceal exposed ends of non-recessed metal lockers.
5. Attach finished end panels using fasteners only at perimeter to conceal exposed ends of non-recessed metal lockers.

3.3 ADJUSTING

- A. Clean, lubricate, and adjust hardware. Adjust doors and latches to operate easily without binding. If applicable, verify that integral locking devices operate properly.]

3.4 PROTECTION

- A. Protect metal lockers from damage, abuse, dust, dirt, stain, or paint. Do not permit use during construction.
- B. Touch up marred finishes, or replace metal lockers that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

END OF SECTION 10 51 13

SECTION 10 55 13

USPS DELIVERY POSTAL SPECIALTIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Horizontal Mailboxes.
 - 1. Front-loading interior mailboxes.

1.2 RELATED SECTIONS

- A. Section 05 44 00 - Cold Formed Metal Framing: Framed wall openings to receive mailboxes.
- B. Section 06 10 00 – Rough Carpentry: Framed wall openings to receive mailboxes.
- C. Section 09 21 16 - Gypsum Board.

1.3 REFERENCES

- A. United States Postal Service (USPS):
 - 1. USPS-STD-4C: United States Postal Service Standard 4C, Wall-Mounted Centralized Mail Receptacles.
 - 2. USPS PUBLICATION 16.
- B. Architectural and Transportation Barriers Compliance Board (ATBCB): Americans with Disabilities Act Accessibility Guidelines (ADAAG) for Buildings and Facilities.
- C. IBC - International Building Code.
- D. ASTM A 666 - Specification for Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
- E. ASTM B 209 - Specification Aluminum and Aluminum Alloy Sheet and Plate.
- F. ASTM B 221 - Specification Aluminum and Aluminum Alloy Extruded Bar, Rods, Wire, Shapes, and Tubes.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 33 00.
- B. Manufacturer's data sheets on each product to be used, including:

1. Construction details, material descriptions, dimensions and finishes.
 2. Preparation instructions and recommendations.
 3. Storage and handling requirements and recommendations.
 4. Installation methods.
- C. Shop Drawings: Prepared specifically for this project; show dimensions of mailboxes, wall cuts, and interface with other products.
- D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- E. Verification Samples: For each finish product specified, two samples, minimum size 2 inches square, representing actual color and texture.

1.5 REGULATORY REQUIREMENTS

- A. Comply with USPS-STD-4C for recessed-mounted centralized mailboxes.
- B. Comply with Americans with Disabilities Act Accessibility Guidelines (ADAAG).

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Manufacturer shall have a Quality System in place to ensure and be able to substantiate that manufactured units conform to requirements and match the approved design and must be ISO 9001:2008 certified.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Inspect the materials upon delivery to ensure that specified products have been received.
- B. Store materials protected from exposure to harmful weather conditions.
- C. Handle materials to prevent damage or marring of finish.

1.8 WARRANTY

- A. Manufacturer's standard warranty to repair or replace components of postal specialties that fail in materials or workmanship within one year from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Salsbury Industries, 1010 East 62nd Street; Los Angeles, CA 90001-1598; Toll Free Tel: 800-MAILBOX (800-624-5269); Fax: 800-624-5299; Email: salsbury@mailboxes.com; Web: www.mailboxes.com

- B. Substitutions: Approved equal.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.2 RECESSED-MOUNTED CENTRALIZED MAIL RECEPTACLES - HORIZONTAL MAILBOXES

- A. USPS Approved Front-Loading Mailboxes: Horizontal style complying with USPS-STD-4C as manufactured by Salsbury Industries or approved equal consisting of multiple compartments enclosed within recessed wall box. Provide access to compartments for distributing incoming mail from front of unit with accessibility to entire group of compartments. Provide access to each compartment for removing mail by swinging compartment door.
 - 1. Model: As indicated on Drawings.
 - 2. Mounting: Recessed mounted.
 - 3. Locks: USPS-1172 910A, 3 keys each lock.
 - 4. Box Identification:
 - a. Engraved Identifier with Black Infill.
 - 5. Mail Distribution:
 - a. Mail Distribution: USPS.
 - 6. Material and Finish: Aluminum with powder coated finish.
 - a. Color: Selected from manufacturer's custom powder coated colors.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that openings in wall are correctly located, aligned, and sized for mailboxes.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.4 CLEANING

- A. Clean surfaces with mild dish detergent. Do not use harsh abrasive cleaners. Lubricate locks with graphite type lubricants only.

3.5 PROTECTION OF INSTALLED PRODUCTS

- A. Protect finishes from damage by construction activities.

END OF SECTION 10 55 13

SECTION 10 57 23.13

WIRE SHELVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes vinyl-coated ventilated shelving installed in maintenance rooms and other locations indicated on Drawings.
- B. Related Requirements:
 - 1. Section 06 10 00 "Rough Carpentry" for wood framing and blocking.
 - 2. Section 09 29 00 "Gypsum Board."

1.3 ACTION SUBMITTALS

- A. Product Data: Manufacturer's catalog data, detail sheets, and specifications.
- B. Shop Drawings: Prepared specifically for this Project; show dimensions of shelving and interface with other products.

1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: All primary products specified in this Section will be supplied by a single manufacturer with a minimum of 10 years experience.
- B. Installer Qualifications: All products listed in this Section are to be installed by a single installer with a minimum of five years demonstrated experience in installing products of the same type and scope as specified.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ClosetMaid Corporation; 325 shelving with Adjustable ShelfTrack Hardware System.

2.2 MATERIALS

- A. Steel Wire: Basic cold drawn, Grade C-1006; average tensile strength over 100,000 psi; coated.
- B. Wire Coating: Proprietary heavy-duty polyvinyl chloride (PVC) formula resin, plasticizers, stabilizers, pigments, and other additives.
 - 1. Thickness: 7 to 17 mils.
 - 2. Classification: No ingredients listed as hazardous per OSHA 29CFR1910.0017.

2.3 MANUFACTURED UNITS

- A. Wire Shelving: Coated steel wire, 1 inch incremental cross-deck spacing.

2.4 ACCESSORIES

- A. Provide manufacturer's standard wall clips, end brackets, and support brackets as necessary for a complete installation for each shelving system.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions:
 - 1. Prepared spaces are sized and located in accordance with Shop Drawings.
 - 2. Framing, reinforcement, and anchoring devices are correct type and are located in accordance with Shop Drawings.
- B. Installer's Examination:
 - 1. Examine conditions under which installation is to be performed; submit written notification if such conditions are unacceptable.
 - 2. Installation activities before unacceptable conditions have been corrected is prohibited.
 - 3. Installation indicates installer's acceptance of conditions.

3.2 INSTALLATION

- A. Cut shelves 1/2 inch to 1-3/8 inches shorter than actual wall measurements; cap all exposed ends.

- B. Install shelving plumb and level at heights indicated in accordance with Shop Drawings and manufacturer's printed installation instructions.
- C. Place wall clips every 10 to 12 inches on level line.
- D. Install end brackets on same level line as wall clips, centered on the front rods of shelves. Support shelves 36 inches maximum with end brackets, support brackets, or poles.
- E. Drill holes where required using sharp bit; do not punch.
- F. Gypsum Board: Drill 1/4 inch hole, inset Preloaded No. 910 or 911 wall clip and use No. 658 #8 x 1 inch pin to expand anchor if unloaded.
- G. Concrete Walls: Drill 1/4 inch hole with masonry bit, insert wall clip No. 911 or 978, secure with No. 8 x 1 inch screws.
- H. Use No. 120 corner support brackets on all corner "butt" joints.
- I. For wall-to-wall installation, use lightning end bracket No. 932, 933, 940, or 941; drill 1/4 inch holes, and secure with No. 8 pins.

3.3 CLEANING

- A. As work proceeds, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris related to this work.
- B. Upon completion of installation, clean all surfaces that have become soiled during installation.

END OF SECTION 10 57 23.13

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Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 11 - EQUIPMENT

11 30 13	RESIDENTIAL APPLIANCES
11 40 00	FOODSERVICE EQUIPMENT
11 82 26	FACILITY WASTE COMPACTORS

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SECTION 11 30 13

RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes appliances for residential units.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include installation details, material descriptions, dimensions of individual components, and finishes for each appliance.
 - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished accessories.
- B. Samples: For each exposed product and for each color and texture specified, in manufacturer's standard size.
- C. Product Schedule: For appliances. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer.
- B. Product Certificates: For each type of appliance.
 - 1. For indicated products, provide certification indicating compliance with requirements for ENERGY STAR product labeling.
- C. Field quality-control reports.
- D. Sample Warranties: For manufacturers' special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each residential appliance to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Maintains, within 100 miles of Project site, a service center capable of providing training, parts, and emergency maintenance repairs.

1.8 WARRANTY

- A. Special Warranties: Manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain residential appliances from single source and each type of residential appliance from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Electrical Appliances: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ENERGY STAR: Where indicated, provide appliances that qualify for the EPA/DOE ENERGY STAR product-labeling program.
- C. Accessibility: Where residential appliances are indicated to comply with accessibility requirements, comply with applicable provisions in the DOJ's 2010 ADA Standards for Accessible Design and ICC A117.1.

2.3 RANGES

- A. Electric Range (Standard): Electric range complying with AHAM ER-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; Model JS645SLSS 30" Slide-In Range.
- B. Electric Range (ADA Standard): Electric range complying with AHAM ER-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; JD630SFSS30" Drop-In Electric Range.

- C. Electric Range (Upgrade 1): Electric range complying with AHAM ER-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Profile PHS930SLSS 30" Slide-In Front Control Induction and Convection Range.
- D. Electric Range (Upgrade 2): Electric range complying with AHAM ER-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Café CES700P2MS1 30" Slide-In Front Control Radiant and Convection Range.
- E. Range Anti-Tip Device: Manufacturer's standard.

2.4 MICROWAVE OVENS

- A. Microwave Oven (Standard): PES7227SLSS Undercabinet Microwave.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group;
- B. Microwave Oven (ADA Standard):
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; JES2051SNSS 2.0 Cu. Ft. Countertop Microwave.
- C. Microwave Oven (Upgrade 1):
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Profile PVM9215SKSS 2.1 cu. ft. Over-the-Range Microwave Oven.
- D. Microwave Oven (Upgrade 2):
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Café CVM521P2MS1 2.1 cu. ft. Over-the-Range Microwave Oven.
- E. UNDERCABINET HOOD
- F. Undercabinet Hood (Standard - ADA):
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; JVX5300SJSS Undercabinet Exhaust Hood.

2.5 REFRIGERATOR/FREEZERS

- A. Refrigerator/Freezer (Standard & ADA): Refrigerator/freezer complying with AHAM HRF-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GDE21ESKSS 21.0 Cu. Ft. Bottom Freezer Refrigerator.
- B. Refrigerator/Freezer (Standard & ADA): Refrigerator/freezer complying with AHAM HRF-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GSS23HSHSS 23.0 Cu. Ft. Side-by-side Refrigerator.
- C. Refrigerator/Freezer (Upgrade 1): Refrigerator/freezer complying with AHAM HRF-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GFE24JSKSS ENERGY STAR 23.6 Cu. Ft. French-Door Refrigerator.
- D. Refrigerator/Freezer (Upgrade 2): Refrigerator/freezer complying with AHAM HRF-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Profile PYE22KSKSS ENERGY STAR 22.1 Cu. Ft. Counter-Depth French-Door Refrigerator.
- E. Refrigerator/Freezer (Upgrade 3): Refrigerator/freezer complying with AHAM HRF-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Café CYE22TP2MS1 ENERGY STAR 22.2 Cu. Ft. Counter-Depth French-Door Refrigerator.

2.6 DISHWASHERS

- A. Dishwasher (Standard): Complying with AHAM DW-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GDF630PSMSS Dishwasher with Front Controls.
- B. Dishwasher (ADA Standard): Complying with AHAM DW-1.
 - 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GDT225SSLSS ADA Compliant Dishwasher.
- C. Dishwasher (Upgrade 1): Complying with AHAM DW-1.
 - 1. Products: Subject to compliance with requirements, provide the following:

- a. GE Appliances; Haier Group; GDF510PMSS Dishwasher with Front Controls.
- D. Dishwasher (Upgrade 2): Complying with AHAM DW-1.
- 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Profile PDT715SYNFS
- E. Dishwasher (Upgrade 3): Complying with AHAM DW-1.
- 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GE Café CDT855P2NS1 Stainless Steel Interior Built-In Dishwasher with Hidden Controls.
- 2.7 CLOTHES WASHERS AND DRYERS
- A. Clothes Washer (Standard): Complying with AHAM HLW-1.
- 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GFW430SSMWW ENERGY STAR 4.5 DOE Cu. Ft. Capacity Frontload Washer.
- B. Clothes Dryer (Standard): Complying with AHAM HLD-1.
- 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GFD45GSSMWW 7.5 Cu. Ft. Capacity Frontload Dryer With Steam.
- 2.8 CLOTHES WASHER/DRYER COMBINATIONS
- A. Clothes Washer/Dryer Combination (Standard): Complying with AHAM HLW-1.
- 1. Products: Subject to compliance with requirements, provide the following:
 - a. GE Appliances; Haier Group; GUD27ESSMWW Unitized Spacemaker 3.8 DOE Cu. Ft. Stainless Steel Washer and 5.9 Cu. Ft. Dryer.
- 2.9 GENERAL FINISH REQUIREMENTS
- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
 - B. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install appliances according to manufacturer's written instructions.
- B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- D. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. Perform visual, mechanical, and electrical inspection and testing for each appliance according to manufacturers' written recommendations. Certify compliance with each manufacturer's appliance-performance parameters.
 - 2. Leak Test: After installation, test for leaks. Repair leaks and retest until no leaks exist.
 - 3. Operational Test: After installation, start units to confirm proper operation.
 - 4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and components.
- B. An appliance will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain residential appliances.

END OF SECTION 11 30 13

SECTION 11 40 00 – FOOD SERVICE EQUIPMENT

PART 11 40 01 - SUMMARY:

General and Supplementary conditions of the contract and Division 1 General Requirements apply to this Section.

- A. Index of the 11 40 00 Section
 - 1. Section 11 40 01 – Summary
 - A. Bidding Instructions
 - B. Alternate Proposals
 - C. Drawings and Specifications
 - D. Changes While Bidding
 - E. Examination of Site, Drawings, Etc.
 - F. Conditions of work
 - G. Owner's Option
 - H. Submission of Bids
 - 2. Section 11 40 02 - General Conditions
 - A. Description of Work
 - B. Intent of Specifications
 - C. Permits and Certificates
 - D. Public Liability, Casualty and Workmen's Compensation Insurance
 - E. Materials and Workmanship
 - F. Construction
 - G. Lost or Stolen Food Service Equipment and Accessories
 - H. Contract responsibility and Omissions
 - I. Fire Protection Systems
 - 3. Section 11 40 03 - General Fabrication Standards
 - A. Legs
 - B. Crossbracing
 - C. Undershelves
 - D. Cabinet Shelves
 - E. Wall Shelves
 - F. Overshelves
 - G. Sinks
 - H. Closure Trim Pieces
 - I. Refrigerated Equipment
 - J. Laminated Plastic
 - K. Dish Tables
 - L. Exhaust Hoods and Canopies
 - M. Walk-In Boxes and Refrigeration Standards

4. Section 11 40 04 - Itemized Specifications
 - A. Schedule of Equipment

5. Section 11 40 05 –Execution
 - A. Coordination of Responsibility
 - B. Scheduling Lead Times and Delivery
 - C. General Contractor Responsibilities
 - D. Food Service Equipment Contractor Responsibilities
 - E. Fire Protection System Contractor Responsibilities
 - F. Millwork Fabricator Responsibilities
 - G. Refrigeration Contractor Responsibilities
 - H. Electrical Contractor Responsibilities
 - I. Plumbing Contractor Responsibilities
 - J. HVAC Contractor Responsibilities
 - K. Storage and Delivery
 - L. Site Inspection and Field Verification
 - M. Installation
 - N. Protection
 - O. Project Closeout Procedures
 - P. Project Record Documents
 - Q. Warranties
 - R. Exhibits

B. 11 40 00 Foodservice Equipment Section Includes:

1. Food Service Equipment, including storage, preparation, cooking, serving equipment, Exhaust Hoods, Walk-In Boxes, Custom Fabricated Equipment, and Commercial Grade Custom Food Service Millwork as indicated on the Food Service Equipment (FS) drawings. The Food Service Equipment drawings form part of these specifications and includes the following sections and equipment typically referred to in these sections:

- A. 11 41 00 Foodservice Storage Equipment**
 - i. 11 41 13 Refrigerated Food Storage Cases
 - ii. 11 41 23 Walk-In Coolers
 - iii. 11 41 26 Walk-In Freezers
 - iv. 11 41 33 Foodservice Shelving
- B. 11 42 00 Food Preparation Equipment**
 - i. 11 42 13 Food Preparation Appliances
 - ii. 11 42 16 Food Preparation Surfaces
- C. 11 43 00 Food Delivery Carts and Conveyors**
 - i. 11 43 13 Food Delivery Carts
 - ii. 11 43 16 Food Delivery Conveyors
- D. 11 44 00 Food Cooking Equipment**
 - i. 11 44 13 Commercial Ranges
 - ii. 11 44 16 Commercial Ovens
- E. 11 46 00 Food Dispensing Equipment**
 - i. 11 46 13 Bar Equipment
 - ii. 11 46 16 Service Line Equipment
 - iii. 11 46 19 Soda Fountain Equipment
 - iv. 11 46 23 Coffee and Espresso Equipment
 - v. 11 46 83 Ice Machines
- F. 23 38 00 Ventilation Hoods**
 - i. 23 38 13 Commercial-Kitchen Hoods
 - ii. 23 38 13.13 Listed Commercial-Kitchen Hoods
 - iii. 23 38 13.16 Standard Commercial-Kitchen Hoods

G. 21 23 00 Wet-Chemical Fire-Extinguishing Systems

- i. 21 23 13 Wet-Chemical Fire-Extinguishing Piping
- ii. 21 23 16 Wet-Chemical Fire-Extinguishing Equipment

H. 12 35 00 Specialty Casework

- i. 12 35 39 Commercial Kitchen Casework

C. Related Sections to be performed by other trades and GC on the project including but not limited by the following Sections:

1. **Concrete Section 03 30 00** and all related sub sections to provide any concrete curbs, pads, and anchors to concrete and masonry for all food service equipment compressors, evaporators and hanging of exhaust hoods.
2. **Openings Section 08 00 00** and all related sub sections to provide any required openings, penetrations, and access doors for food service equipment installation, venting and serviceability.
3. **Flooring Section 09 60 00** and all related sub sections to provide any required flooring finishes that would extend into recessed walk-in cooler/freezer boxes.
4. **Residential Equipment Section 11 30 00:** The Food Service Equipment drawings may have additional residential equipment specified to be provided by GC and may include the following sections and equipment. **11 30 13 Residential Appliances, 11 30 13.13 Residential Kitchen Appliances.** GC to bid and supply this equipment outside of Food Service Equipment Dealer (section 11 40 00) scope.
5. **Plumbing Section 22 00 00** and all related sub sections to provide final connections to all food service equipment including all fittings and accessories. Refer to Part V - Execution Section 5.10 for additional Plumbing requirements and coordination with Food Service Equipment.
6. **Heating, Ventilating, and Air Conditioning (HVAC) Section 23 00 00** and all related sub sections to provide final connections to commercial Kitchen Hoods exhaust air and make up air, both tempered and conditioned. Refer to Part V - Execution Section 5.11 for additional HVAC requirements and coordination with Food Service Equipment.
7. **Electrical Section 26 00 00** and all related sub sections to provide final connections to all food service equipment including all breakers, panels, disconnects and accessories Refer to Part V - Execution Section 5.9 for additional Electrical requirements and coordination with Food Service Equipment.
8. **Communications Section 27 00 00** and all related sub sections to provide final connections for all low voltage requirements including but not limited to POS (Point of Sale), POS Printers, Digital Menu Boards, Order Management Screens, HACCP Temperature Monitoring Systems, Video Exhibition Systems.

1.01 Bidding Instructions

- A. Bids for Food Service Equipment must be based on the materials, fabrication methods, equipment and accessories exactly as specified without exception. Failure to follow this instruction will disqualify the bid. The Contract is to be awarded as follows:
1. The competence and responsibility of bidders shall be considered in making the award.
 2. The Architect, Consultant, and/or Owner are not obligated to accept the lowest or any other bid. The award of the Contract and the choice of the Food Service Equipment Contractor (section 11 40 00) shall be at the Architect's, Consultant's, and/or Owner's discretion.

1.02 Alternate Proposals

- A. Various items are specified by brand, trade name, or name of manufacturer and model number. **The base bid must include the price for the manufacturer and model number exactly as specified.**
- B. The Food Service Equipment Contractor (section 11 40 00) may propose alternate equipment to be considered for substitution supplying full data and cut sheet for each item. Alternate bid items to include all options, accessories and features for each individual item clearly noted and listed. For all systems, remote rack, walk-in boxes, cooking suites, etc. FSEC to provide engineered drawings to accompany bid illustrating that the alternate manufacturer has captured all design features and quality of construction. Some alternate manufacturers must provide additional components and accessories beyond what is specified in basis of design to deliver equal performance of system. Change orders for additional components, material, labor, and service to make system fully operational will be rejected.
- C. Dealer to fill out and submit form as provided in specifications, exhibit B – “VE & Alternate Product Certification Form”
- D. Prices for all proposed alternate equipment shall state the amount to be added to or deducted from the base bid if the alternate item is accepted.
- E. The Architect or the Consultant or their representatives shall be the sole judge of the quality and acceptability of the substitute offered.
- F. **Alternates or substitutions shall be considered only at the time of bidding as outlined above. See exhibit 9 – and utilize “VE & Alternate Product Certification Form” for any proposed alternates. Alternates proposed without this form provided will be rejected.**
- G. The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.

H. SHG Alternates Accepted:

Product Category	Accepted Manuf. Alternates	Strictly Prohibited
Bar Equipment	<ul style="list-style-type: none"> • Krowne • Eagle • Perlick 	<ul style="list-style-type: none"> • Regency
Beverage Blenders	<ul style="list-style-type: none"> • Vitamix • Waring • Blendtec 	<ul style="list-style-type: none"> • Avamix • Galaxy
Blast Chillers	<ul style="list-style-type: none"> • Irinox • American Panel • Thermokool 	<ul style="list-style-type: none"> • Electrolux
Braising Pans/Tilt Skillets	<ul style="list-style-type: none"> • Cleveland • Vulcan • Groen 	<ul style="list-style-type: none"> • Eurodib • Infrico
Kitchen blenders	<ul style="list-style-type: none"> • Vitamix • Waring • Blendtec 	<ul style="list-style-type: none"> • Avamix • Galaxy
Carts and Kiosks	<ul style="list-style-type: none"> • Custom • Duke • Vollrath 	<ul style="list-style-type: none"> • Regency • Choice
Char Broilers	<ul style="list-style-type: none"> • Vulcan • Garland • Southbound 	<ul style="list-style-type: none"> • Avantco • Cooking Performance Group
Concession Equipment	<ul style="list-style-type: none"> • Star • APW 	<ul style="list-style-type: none"> • CPG
Cook and Hold Ovens	<ul style="list-style-type: none"> • Winston CVAP • Alto-Shaam • Cres Cor 	
Cooking Suites	<ul style="list-style-type: none"> • Jade • Montague • Vulcan 	<ul style="list-style-type: none"> • Hestan
Custom S/S Counters	<ul style="list-style-type: none"> • Eagle Group • Advance Tabco 	<ul style="list-style-type: none"> • Commercial Stainless • Spokane Stainless • Regency
Dish/Warewashers	<ul style="list-style-type: none"> • Hobart • Champion 	<ul style="list-style-type: none"> • Jackson • CMA • Noble
Display Cases	<ul style="list-style-type: none"> • Structural Concepts • RPI 	<ul style="list-style-type: none"> • Federal • Avantco
Disposers	<ul style="list-style-type: none"> • Salvajor • InSinkErator 	
Drawer Warmers	<ul style="list-style-type: none"> • Alto-Shaam • Winston-CVAP • Hatco 	<ul style="list-style-type: none"> • Servit
Drop-In Hot Wells Drop-In Cold Wells Drop-In Hot/Cold Wells	<ul style="list-style-type: none"> • Vollrath • Wells • Delfield 	
Espresso Machines	<ul style="list-style-type: none"> • Rancilio • Nuova • Cimbali • Schaerer 	<ul style="list-style-type: none"> • Estella Coffee
Food Processors	<ul style="list-style-type: none"> • Robot Coupe • Waring • KitchenAid 	<ul style="list-style-type: none"> • Avantco • Avamix

Fryers	<ul style="list-style-type: none"> ● Frymaster ● Vulcan ● Pitco 	<ul style="list-style-type: none"> ● Avantco
Gas Hoses	<ul style="list-style-type: none"> ● Dormont ● T&S Brass 	<ul style="list-style-type: none"> ● Regency
Glasswasher	<ul style="list-style-type: none"> ● Hobart ● Gastender ● Meiko 	<ul style="list-style-type: none"> ● Noble
Griddles	<ul style="list-style-type: none"> ● Accutemp ● Vulcan ● Garland 	<ul style="list-style-type: none"> ● Avantco ● CPG
Heat Lamps	<ul style="list-style-type: none"> ● Hatco 	<ul style="list-style-type: none"> ● Avantco
Heat Lamps - Decorative	<ul style="list-style-type: none"> ● Baselite ● Hatco 	
High Speed Oven (Ventless)	<ul style="list-style-type: none"> ● Merrychef ● Turbochef ● Amana 	
High Speed Steamers/ Microwaves	<ul style="list-style-type: none"> ● Panasonic ● ACP 	
Hoods	<ul style="list-style-type: none"> ● Captive-Aire ● Halton ● Accurex ● Caddy 	<ul style="list-style-type: none"> ● Halifax
Hot Food Heating/Holding Cabinets	<ul style="list-style-type: none"> ● Metro ● Alto-Shaam ● Winston-CVAP 	<ul style="list-style-type: none"> ● Avantco
Hot Food Tables i.e., steamtables	<ul style="list-style-type: none"> ● Vollrath ● Delfield ● Randell ● Duke ● Eagle Group 	<ul style="list-style-type: none"> ● Servit
Ice Cream Machine	<ul style="list-style-type: none"> ● Taylor ● Stoelting 	
Ice Cream Dipping Cabinet – Drop-In	<ul style="list-style-type: none"> ● Randell ● Delfield 	
Ice Cream Dipping Cabinet - Stand Alone	<ul style="list-style-type: none"> ● Master-Bilt ● Stoelting 	
Ice Makers	<ul style="list-style-type: none"> ● Follett ● Manitowoc ● Hoshizaki 	<ul style="list-style-type: none"> ● Avantco
Induction Cooktops	<ul style="list-style-type: none"> ● Vollrath ● Garland ● Spring 	<ul style="list-style-type: none"> ● Avantco
Kettles	<ul style="list-style-type: none"> ● Cleveland ● Vulcan ● Groen 	
Microwaves	<ul style="list-style-type: none"> ● Panasonic ● Amana/ACP ● Waring 	<ul style="list-style-type: none"> ● Solwave
Millwork	<ul style="list-style-type: none"> ● Custom 	
Mixers 12+ quarts	<ul style="list-style-type: none"> ● Hobart ● Globe 	<ul style="list-style-type: none"> ● Avantco
Oven - Combination	<ul style="list-style-type: none"> ● Rational ● Alto-Shaam ● Cleveland 	
Oven - Convection	<ul style="list-style-type: none"> ● Vulcan ● Blodgett ● Southbend 	<ul style="list-style-type: none"> ● Avantco ● CPG

Oven - Conveyor	<ul style="list-style-type: none"> ● Lincoln ● Turbochef (Ventless) 	<ul style="list-style-type: none"> ● Avantco
Oven, Hearth	<ul style="list-style-type: none"> ● Woodstone ● Beech ● Earthstone ● Marra Forni 	
Ovens, Deck	<ul style="list-style-type: none"> ● Baker's Pride ● Blodgett ● Empire 	
Panini Press	<ul style="list-style-type: none"> ● Star ● Hatco ● Equipex 	<ul style="list-style-type: none"> ● Avantco
Patient Delivery Carts	<ul style="list-style-type: none"> ● Dinex ● Aladdin ● Cambro 	
Pellet Activators	<ul style="list-style-type: none"> ● Dinex ● Aladdin 	
Pot Wash Sinks	<ul style="list-style-type: none"> ● PowerSoak ● Duke 	
Pulpers	<ul style="list-style-type: none"> ● Hobart ● Somat ● InSinkErator 	
Racks	<ul style="list-style-type: none"> ● Metro – MetroMax Q Racks ● Metro – Green Epoxy Coated ● Eagle Group 	<ul style="list-style-type: none"> ● Regency
Ranges	<ul style="list-style-type: none"> ● Vulcan ● Garland ● Southbend 	<ul style="list-style-type: none"> ● Avantco ● CPG
Reach-In Refrigeration	<ul style="list-style-type: none"> ● Victory ● True Spec Line ● Continental ● Beverage Air ● Hoshizaki 	<ul style="list-style-type: none"> ● Delfield ● Avantco ● Galaxy
Refrigeration Racks	<ul style="list-style-type: none"> ● RDT ● ColdZone 	<ul style="list-style-type: none"> ● Cooltec
Remote Beer Systems	<ul style="list-style-type: none"> ● MicroMatic ● Perlick ● ChillRite 	
Rotisseries	<ul style="list-style-type: none"> ● Vertical Rotisserie – Wood Stone ONLY ● Rotisol ● BKL ● Alto-Sham 	
Self-Leveling Dispensers	<ul style="list-style-type: none"> ● Delfield ● Lakeside 	
Serving Carts	<ul style="list-style-type: none"> ● Duke ● Vollrath ● Eagle Group 	
Shelving	<ul style="list-style-type: none"> ● Metro ● Eagle Group 	<ul style="list-style-type: none"> ● Regency
Slicers	<ul style="list-style-type: none"> ● Hobart ● Bizerba ● Berkel ● Globe 	<ul style="list-style-type: none"> ● Avantco ● Backyard Pro
Smokers	<ul style="list-style-type: none"> ● Southern Pride ● Cook Shack 	
Sneezeguards	<ul style="list-style-type: none"> ● Premier Metal Glass ● BSI 	

Steamers	<ul style="list-style-type: none"> • Cleveland • Vulcan • Southbend 	<ul style="list-style-type: none"> • Crown
Toasters - Conveyor	<ul style="list-style-type: none"> • Star • Hatco • Waring 	<ul style="list-style-type: none"> • Avatoast
Ventless Hoods	<ul style="list-style-type: none"> • Wells • Giles 	
Walk-In Refrigeration	<ul style="list-style-type: none"> • Thermo-Kool • Bally • American Panel • Kolpak 	<ul style="list-style-type: none"> • ThermalRite
Water Filters	<ul style="list-style-type: none"> • Everpure • OptiPure • Cuno/3M • Rational Filters for Combis 	<ul style="list-style-type: none"> • C Pure

1.03 Drawings and Specifications Conflicts and Discrepancies

- A. If any floor plan to written specifications exist, for binding and estimating purposes, the following shall apply.
- B. **Floor Plans vs. Written Specifications:** The project shall be performed in accordance with the requirements of the drawings and specifications combined, subject to modifications as provided in the General Conditions. The drawings and specifications are intended to complement and supplement each other. Any work required by either of them or not by the other shall be performed as if denoted in both.
- C. **Quantities:** Larger quantity takes precedence. If floor plans call out for larger quantity, that quantity shall be provided or if specifications call for larger quantity, that quantity shall be provided.
- D. **Door Swings:** Plan orientation of door swings define function and flow and take precedence over written specification when conflicts exist.
- E. Food Service Equipment Dealer to submit formal RFI's for all above clarifications purposes and record.

1.04 Changes While Bidding

- A. During examination of the contract documents, or the site, should a bidder find any discrepancies, omissions, ambiguities, or conflicts, or be in doubt as to their meaning, the Architect and/or Consultant shall be notified no later than four (4) days before the bid opening date. Where the information sought is not clearly available, the Architect and/or Consultant shall issue a clarifying bulletin to all bidders which shall become a part of the contract documents.

1.05 Examination of Site, Drawings, Etc.

- A. Each bidder shall visit the site of the proposed work, if applicable, and fully acquaint himself with the conditions as they exist so that he may fully understand the facilities, difficulties, and restrictions attending the execution of the work under this contract.
- B. Bidders shall also thoroughly examine and be familiar with the drawings and specifications. The failure or omission of any bidder to receive or examine any form, instrument, or document, or to visit the site and acquaint himself with the conditions there existing shall in no way relieve him from obligation with respect to his bid. By submitting a bid, the bidder agrees and warrants that he has examined these items and finds them to be adequate to produce the desired results. No claim for any extra will be allowed because of alleged difficulties arising from unintentional errors or conflicts in the contract documents.

1.06 Conditions of Work

- A. Insofar as possible, the Food Service Equipment Contractor (section 11 40 00) in carrying out his work must employ such methods or means as necessary to avoid interruption of or interference with the work of any other contractor.

1.07 Owner's Option

- A. It is intended that the contract be awarded as a whole to the successful bidder.
- B. An itemized breakdown is required so that the Owner may, at his option, delete the item in its entirety, supply any part or portion thereof, or increase the quantity, making a suitable adjustment in the contract price based on the breakdown.
- C. The Owner reserves the right to reject any or all bids, or to waive irregularities or informalities, accepting only that best serving his interests.

1.08 Submission of Bids

- A. Bids shall be addressed to:
REFERENCE BIDDERS' INVITATION LETTER
- B. Bids shall be received no later than:
REFERENCE BIDDERS' INVITATION LETTER
- C. Equipment installation is expected to begin:
REFERENCE BIDDERS' INVITATION LETTER

PART 11 40 02 - GENERAL CONDITIONS

2.01 Description of Work

- A. The Food Service Equipment Contractor (section 11 40 00) shall furnish all labor, materials, equipment, and services necessary for all items specified. These shall be delivered prepaid; uncharted; assembled with all components within the equipment proper completely connected; set in place; leveled; fastened to the walls, floor, and ceiling if required; and left ready for final connections by other trades, which shall extend utility lines from rough-in locations to the final connection points on the equipment.
- B. If items appear on drawings and are not included in the specifications, or vice versa, the Food Service Equipment Contractor (section 11 40 00) shall furnish the items as though they appear in both places. If a conflict exists between drawings and specifications the Food Service Equipment Contractor (section 11 40 00) shall notify the Architect or Consultant for a determination as to which is correct.
- C. All work is to be performed by the proper trades using skilled labor. All work shall be performed at hours required to maintain consistent work schedules with all other trades without additional cost to the Architect, Consultant, or Owner.
- D. If any work specified under this Contract must be done by others as a result of jurisdictional trade agreements or other restrictions, this Food Service Equipment Contractor (section 11 40 00) shall sublet such work as necessary or make other satisfactory arrangements at his own expense and with the understanding that such work shall be done in accordance with the specifications and work schedule.
- E. Care shall be taken to prevent any damage whatsoever to the equipment, building, or previous work. Such damage will be repaired at the expense of the Food Service Equipment Contractor (section 11 40 00) causing same.
- F. Any field cutting, or welding shall comply with the provisions of the National Fire Protection Association's "National Fire Codes" or local requirement, whichever is more stringent, pertaining to such work, and the Food Service Equipment Contractor (section 11 40 00) shall be responsible for any damage resulting from failure to comply.
- G. The Food Service Equipment Contractor (section 11 40 00) shall at all times keep the premises free from waste materials or rubbish caused by his work. At the completion of each day's work such refuse must be removed, and the area swept broom clean. Dust partitions shall be constructed around the areas under work.
- H. Prior to turning completed areas over to the Owner, the Food Service Equipment Contractor (section 11 40 00) shall clean and polish all equipment herein specified and make it ready for use, including commissioning and demonstration to the Owner.

2.02 **NOT USED**

2.03 **Intent of Specifications**

- A. Equipment shall be of the finest quality in materials, finish, and workmanship.
- B. Particular attention shall be paid to details of fabrication to insure ready accessibility for cleaning.
- C. All equipment shall strictly adhere to or exceed the guidelines of the National Sanitation Foundation as well as any requirements of the jurisdiction having authority.
- D. All eligible equipment shall display the NSF seal or be rejected.
- E. All eligible equipment shall display the UL label or be rejected.
- F. All fabricated equipment shall meet or exceed the standards of construction used by the National Association of Food Equipment Manufacturers, National Sanitation Foundation, and National Fire Protection Association.
- G. The Food Service Equipment Contractor (section 11 40 00) shall be responsible for checking all pages of this specification, and missing pages will be provided by the Architect or Consultant upon request. When the Food Service Equipment Contract is placed it will be assumed that the Food Service Equipment Contractor (section 11 40 00) has all pages and addenda in his possession, and they are part of the Food Service Equipment Contract.

2.04 **Permits and Certificates**

- A. The Owner may withhold any payments which are due, or which may become due to the Food Service Equipment Contractor (section 11 40 00) until the necessary certificates are procured and delivered to him. Copies of certificates shall be provided to the Architect or Consultant upon request.

2.05 **Public Liability, Casualty and Workmen's Compensation Insurance**

- A. The Food Service Equipment Contractor (section 11 40 00), at his own cost and expense, shall procure and maintain satisfactory public and property liability and casualty insurance to adequately protect himself and the Owner against liens for damages and personal injury, including death, which may arise from operations whether by himself or by any subcontractor, or anyone directly or indirectly employed. In the case of new construction, the requirements are as directed by the Architect or Owner. The Food Service Equipment Contractor (section 11 40 00) is responsible for determining what insurance is required before starting work.

2.06 **Not Used**

2.07 **Not Used**

2.08 **Not Used**

2.09 Materials and Workmanship

A. General

1. Stainless steel shall be type 302 or 304, #4 finish where exposed and #2B where concealed. Sheets shall be flat and free of buckles or imperfections.
2. Core materials shall be 3/4" exterior or marine grade plywood unless otherwise specified. Particle board or other pressed wood products are not acceptable.
3. All exterior galvanized parts, exposed framework members, and other areas where painting is indicated shall be cleaned, primed, degreased, and finished with two coats of epoxy-based grey hammertone paint.

B. Plumbing

1. The Food Service Equipment Contractor (section 11 40 00) shall provide all necessary faucets, drains, overflows, pre-rinse spray assemblies and tailpieces. All faucets shall be equipped with a vandal proof non-splash aerator.
2. Where so indicated in the specifications, the Food Service Equipment Contractor (section 11 40 00) shall run piping internally from the fixture(s) to an accessible point for final connection by the plumbing contractor. All horizontal piping shall be run as high as possible within the equipment, and in no case, shall be less than 6" above the floor.

C. Electrical

1. Equipment shall be completely internally pre-wired by the Food Service Equipment Contractor (section 11 40 00) in accordance with applicable codes and regulations. Where multiple electrical requirements occur in a single piece of equipment, the Food Service Equipment Contractor (section 11 40 00) shall wire to a junction box or electrical panel, as shown on the drawings and item specifications, for final connection by the electrical contractor. All wires left for such final connection shall be neatly tagged showing item number, voltage, and load.
2. The Food Service Equipment Contractor (section 11 40 00) shall provide neoprene cords and plugs for all items requiring same and shall coordinate his work with the electrical contractor to insure proper receptacle match. The Electrical Contractor will shorten, lengthen, or conceal all electrical cords as required by the Consultant and/or Architect. The Electrical Contractor will also change all plugs, wires, and outlets so connections can be properly made.
3. The Food Service Equipment Contractor (section 11 40 00) shall provide fluorescent light fixtures, lamps, ballasts, and protective non-breakable sleeves for all equipment requiring fluorescent lighting.

D. Refrigeration

1. Mechanically operated cold pans and similar devices shall be provided with a normally closed liquid line electric solenoid installed before the expansion valve and wired to a switch with a neon "on" indicator. This shall be a circuit separate from the compressor. This arrangement will not directly turn off the compressor but will stop the refrigerant flow and cause the compressor to turn off through the action of the compressor control.

2.10 Construction

A. General

1. All items of custom fabricated equipment shall be constructed in a workmanlike and strong manner, in accordance with the highest standards and traditions of the craft, including the adequate number and gauge of reinforcing members and uprights. Wherever standard sizes will permit, each component shall be from a single sheet of material. Where tops or other large, unbroken surfaces are of such size to require more than one sheet, joints shall be welded, ground, and polished so as to appear integral.
2. Any pipe slots or other openings cut in the equipment for passage of utilities shall be performed in the shop whenever possible and shall be ground to eliminate any possibility of injury or damage to personnel and equipment.

2.11 Lost or Stolen Food Service Equipment and Accessories

- A. Until all the equipment is accepted by the Owner, the Food Service Equipment Contractor (section 11 40 00) is responsible for the replacement of all items that are either lost or stolen regardless of where they were lost.
- B. All costs to replace the items either lost or stolen will be that of the Food Service Equipment Contractor (section 11 40 00).
- C. The Food Service Equipment Contractor (section 11 40 00) must do everything within his control to expedite the fastest delivery to replace the lost or stolen items not excluding air freight and overtime if required to maintain all work schedules.
- D. The Food Service Equipment Contractor (section 11 40 00) has the same replacement responsibility described above on any item that was ordered or shipped incorrectly.

2.12 Contract Responsibility and Omissions

- A. In a case of "omission(s)" of any kind, whether it is a utility or food service equipment, and it is certain that none of the contract documents have any information on the "omission," it is understood that the item or items referred to the omission(s) are to be provided as an 'extra' work order and the Food Service Equipment Contractor (section 11 40 00) will be asked to submit an estimate to furnish the extra item(s). If the "omission(s)" is discovered at the time of estimating the food service equipment, the Food Service Equipment Contractor (section 11 40 00) will furnish a separate bid to include the omission(s).
- B. All utilities such as steam, electric, gas, water, drains, etc., for items of omission will be provided by the General Contractor or subcontractors.

- C. All costs to provide extra work will be processed, reviewed, and assembled by the person that requested the bid.
- D. If a Performance Bond is required by the Owner, it will be requested prior to awarding contracts.

PART 11 40 03 - GENERAL FABRICATION STANDARDS

3.01 Legs

- A. Legs shall be constructed of 1-5/8" outside diameter #16-gauge stainless steel tubing meeting specifications for tubing previously set forth. Each leg shall be swaged and tapered at the bottom and be provided with a cast or formed, fully enclosed stainless-steel bullet shaped adjustable foot. This foot shall be threaded into a collar which is welded completely inside the tubular leg in such position as to permit a minimum adjustment of 1" up or 1" down without any thread exposure. The bullet shaped foot must have a minimum bearing surface of 3/4" diameter at floor contact. Leg and foot assemblies shall be equal to Klein series #22R or Klein #1012-1002-1144 or United Show Case #8F-158 for bullet foot and #22F or Klein #1012-1003-1144 for flanged foot without holes. Flanged feet with holes shall be Klein #1012-1004-1144.
- B. The legs shall be fastened to 4" high stainless steel conical shaped, die formed gussets with locking set screw, equal to Klein #483-58 or #1018-1206-1283 or United Show Case #SG-158.
- C. The gussets are to be welded continuously to the sink bottom or to table or dish table bracing with welds filleted, ground, and polished to smooth coved radius. Particular care must be taken to prevent warping of sink bottom and to see that legs are plumb and true.
- D. On cabinet fixtures, the legs shall be equal to Klein #222-50 SSA or Klein #1012-1002-1144 or United Show Case #BF-158 for bullet feet, welded directly to bottom angle frame and/or to flat steel triangular plates which are welded fully to bottom frame.

3.02 Crossbracing

- A. All sinks, drainboards and tables, except where fixed undershelves are specified, shall be provided with 1-1/4" outside diameter, #16-gauge stainless steel tubular crossbracing running between legs at a point 10" above floor, Crossbraces shall be continuously welded to legs neatly fitted, ground and polished to provide a smooth coved radius.
- B. In certain fixtures, crossbracing will abut cabinet-type fixtures. In such instances, round, stainless steel collar-type flanges shall be provided for fastening crossbracing to bodies. Flange shall be equal to Klein Hardware #SS-425-FC. The collar shall be tapped and provided with a cone point, stainless steel Allen Headset screw.

3.03 Undershelves

- A. Undershelves shall be constructed of #18-gauge stainless steel. Each corner shall be notched 90° to the exact contour of tubular legs and continuously welded to same, ground smooth and polished.
- B. Shelves shall be turned down 1-1/2" then back 1/2" at a 45° angle. Mount shelf 10" above floor unless otherwise noted. Where abutting walls or fixtures, turn up 2" on a 1/2" radius.

- C. Suitable pipe slots shall be provided through all undershelves on open base fixtures to accommodate necessary service lines. These slots shall be of proper size and shall be neatly made with turned up edges on all four (4) sides to eliminate cutting or defacing of the equipment on the job. Cabinet bases shall be provided with an inner panel duct at ends or rear (or both) of cabinet to allow vertical pipe space to conceal the verdict piping.

3.04 Cabinet Shelves

- A. All shelves shall be constructed of #16-gauge stainless steel, turned up 2" at back and ends on a 1/2" radius. Turn down front (exposed edge) 1-1/2" to 1-3/4" on a 90° angle and back 1/2" on a 45° angle (unless otherwise specified). Close corners by welding continuously for rigidity, grind smooth and polish weld. Where specified as removable, shelves shall be set into 1-1/2" x 1/8" stainless steel angle frame welded in place.
- B. Fixed intermediate shelves shall be welded to front stiles and welded to #14-gauge stainless steel brackets which in turn are welded to the body in such a manner so that intermediate shelves set 1" clear from back and ends of cabinets.
- C. Where adjustable shelves are specified, they shall have edges formed into a channel on four (4) sides with all corners welded, ground smooth and polished. Mount shelves on removable Klein Hardware #502-R-SS (standards), with #503-SS (supports).
- D. Fixed bottom shelves shall be welded to bodies as specified for counters.

3.05 Wall Shelves

- A. Wall shelves shall be size, and shape as shown on plan, constructed of #16-gauge stainless steel with 1-1/2" to 1-5/8" diameter roll on front and turned up 2" on a 1/2" radius on back and unexposed ends adjacent to other fixtures. All corners are to be welded, ground smooth and polished.
- B. Exposed ends of shelf shall be enclosed, full width of shelf to bottom of front roll, fully welded, ground smooth and polished.
- C. Wall brackets of approved shape shall be constructed of #12-gauge stainless steel flanged in under shelf and at wall 1-1/2" with intersecting flanges completely welded. Each bracket shall be fastened to wall with minimum of two (2) 1/4" #20-gauge stainless steel bolts anchored securely by means of toggles or expansion shields, whichever is best suited to wall construction.
- D. Shelves to set either 1" clear from wall or flush with wall and be sealed with silicone sealant. Secure shelf to brackets using 1/4" #20-gauge stainless steel stud bolts, chrome plated lockwashers and cap nuts.

3.06 Overshelves

- A. Shelves mounted over equipment not adjacent to walls shall be fabricated of #16-gauge stainless steel and shall set on 1" outside diameter #16-gauge stainless steel tubular standards neatly fitted with stainless steel base flanges. The top of the tubular standards shall be completely welded to #14-gauge stainless steel support channels which shall run the full width of the overshelf and be welded thereto.

- B. Inside the tubular standards and securely welded to same shall run 1/2" outside diameter steel tension rods, which shall be extended through counter tops and reinforcing angle framing. This extension shall be threaded and secured to framing with nuts and lock washer in such a manner to assure a stable, sway free structure.
- C. Where shelves are mounted over drainboards or dish tables, the stainless-steel tubular uprights shall be continuously welded to the upturned, rolled edges omitting flanges and scribing lower end of the tube to match the contour of the roll.
- D. Wall mounted rack shelves shall be constructed of #14-gauge s/s, all welded, with closed ends and a reversed raised rolled edge. Front edge to terminate in a 1-5/8" diameter 180° roll edge, turned in. Rear edge shall be turned up approximately 120° flush with wall. Support shelf to rear wall at an angle of 40° by means of #12-gauge stainless steel cantilever-type wall plates. Brackets shall be flanged outward 90° at 1-1/2". Drill adequate holes and secure to wall using lead anchors or toggles and stainless-steel bolts. Verify wall construction for proper mounting. Shelf shall be adequately braced with 1" x 3" x 1" #12-gauge stainless steel channels welded to underside of shelf not over 26" on centers. Pitch to 1" outside diameter stainless steel bleeder drain at one end of the shelf by varying the dimension of the horizontal trough bottom. The raised rolled edge shall not be pitched but shall remain parallel to the floor. Provide a flexible drain tube to the stainless-steel drain which shall be firmly mounted and strapped in place, running down from shelf to a point 2" above drainboard or dish table surface.

3.07 Sinks

- A. Sinks shall be fabricated from #14-gauge stainless steel with all interior corners rounded to a 3/4" minimum radius, both horizontally and vertically, forming spherical corners. Solder or separate filler pieces to achieve the rounded corner construction will not be used or permitted. All joints shall be butt-edged, electrically welded, ground smooth and polished so that no evidence of welding will appear.
- B. The bottom of each compartment shall be pitched and creased to a die-stamped recess, so tapered and shaped as to receive lever-type waste without use of solder, rivets, or welding.

3.08 Closure Trim Pieces

- A. Trim pieces of #16-gauge stainless steel (minimum thickness) one (1) piece construction shall be furnished to seal both horizontal and vertical joints and openings where the conditions given below occur.
 - 1. Where equipment is installed into wall openings, trim shall be applied to both sides of wall. All corners welded, use straps to connect inside trim to outside trim, no screws exposed to view.
 - 2. Where items of similar construction are butted together.
 - 3. Where equipment installed against walls or other equipment, results in a gap or joint where vermin or grease might collect.
 - 4. Butt or overlapping joints will not be acceptable. Where channel-type closures are required, they shall be delivered to the job site before surrounding walls are erected or equipment is set in place.

- B. Silicone sealant shall be used only where trim pieces will not effectively seal the gap. Sealant shall be as specified hereinbefore in Materials and Workmanship.

3.09 Refrigerated Equipment

- A. All refrigeration condensing units shall be installed so that adequate air circulation is obtained. Compressor compartments in all fabricated units shall be provided with stainless steel grilles and cross ventilation shall be provided where required.

3.10 Laminated Plastic

- A. Where an item is specified to be faced with laminated plastic, Formica, Nevamar, Wilsonart or other selected material shall be used bonded with contact adhesive to exterior grade plywood 3/4" minimum thickness.
- B. Stainless steel counters specified to be finished with plastic laminate shall have all exposed faces and edges faced with 1/16" thick plastic laminate. Unexposed back shall be faced with .020 or .020 cabinet liner. Beveling will be not acceptable on finished edges. Although plastic laminate counter fronts are backed up, the counter unit will be stainless steel on the complete interior.
- C. Millwork counters shall be constructed of 3/4" thick exterior grade plywood for the cabinet body and splashes and 1-1/4" thick exterior grade plywood for the countertop. Blocking shall be provide as required to provide support. Undersides of counter tops shall be finished with backing sheets. All other interior finishes shall be finished with white cabinet liner. All finished edges of cut-outs and recessed surfaces shall be finished with plastic laminate. All exposed exterior surfaces, whether visible to the eye or not, shall be finished with plastic laminate (i.e., door edges, drawer edges, underside of countertop overhang, all shelf edges, and surfaces, etc.). Painted finishes will not be acceptable.
- D. Where plastic laminate is specified to be bonded directly to the counter or cabinet bodies, a contact adhesive shall be used as recommended by the plastic laminate manufacturer (compatible with the metal surface).

3.11 Dish Tables

- A. Tops shall be fabricated of #14-gauge stainless steel with all freestanding edges turned up 3" and finished with a 1-5/8" diameter 180° integral roll. Where tables adjoin walls, they shall be turned up integrally 10" on a 1/2" radius at 90° and back 2" at 45° and down 1/2" along the back. Where the table enters the dishwasher, it shall be turned down into the mouth and fastened thereto in a watertight manner as recommended by the manufacturer of the dishwasher. All corners, both horizontal and vertical, shall be coved on a 1" radius.
- B. Tables shall be fully reinforced by means of #14-gauge stainless steel channels to eliminate deflection under full workload. All interior horizontal and vertical corners shall be coved, and exterior corners shall be bullnosed.
- C. Where a scrap trough is indicated, it shall be length as shown on plan x 6" wide x 5" deep and formed integrally with dish tabletop. Trough shall be of all cove corner construction with the bottom only pitched a minimum of 1/8" to the foot downward toward the disposer.

- D. The tables shall be mounted on stainless steel tubular legs with adjustable feet and crossbraces as previously specified. Where scrap blocks are installed in the top, the front crossbrace shall be eliminated for the insertion of garbage can. Undershelves shall be provided where called for in the Schedule of Equipment and when so indicated shall be fabricated as previously specified.

3.12 Exhaust Hoods and Canopies

- A. All hangers, duct work, dampers, collars, cleanouts, filters, and grease receptacles will be furnished and installed by the Food Service Equipment Contractor (section 11 40 00) (in accordance with surrounding construction).
- B. All mechanical and electrical work required for exhaust hoods, canopies and ventilators will be provided by the General Contractor or Subcontractors, not the Food Service Equipment Contractor (section 11 40 00). The only plumbing and electrical work provided by the Food Service Equipment Contractor (section 11 40 00) will be that which is provided as a standard practice by the hood, canopy and/or ventilator supplier or manufacturer.
- C. All vertical and horizontal duct connections will be designed by the HVAC Engineer or exhaust air with proper velocity control and coordination to hood duct collar location(s).
- D. All roofing, curbing, construction openings, general construction and duct work above ceiling related to the final exhausting including the fan(s) will be furnished by Contractors other than the Food Service Equipment Contractor (section 11 40 00).

3.13 Walk-in Boxes and Refrigeration Standards

- A. The Food Service Equipment Contractor (section 11 40 00) will be responsible for furnishing and installing all walk-in boxes including compressors, blowers, coils, evaporators, lights, thermostats, thermometers, condensate lines and heater wires around freezer condensate lines within the freezer walk-in.
- B. All remote and self-contained refrigeration lines will be provided by the Food Service Equipment Contractor (section 11 40 00) as required and shall be adequately insulated.
- C. All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor (section 11 40 00).
- D. All freezer alarms and time clocks will be provided and set-in place by the Food Service Equipment Contractor (section 11 40 00) including securing same to walls, floors, or ceilings. All final connections will be made by the Electrical Contractor.
- E. All walk-in box filler panels (stainless steel) will be provided by the Food Service Equipment Contractor (section 11 40 00) as required by the Board of Health, the Architect, Consultant and/or Owner if the boxes are to be right against walls, food service equipment or ceilings.

- F. The refrigerant lines to be sized to maintain proper velocity for good oil return and to prevent capacity loss. The proper sizes of all compressors to maintain adequate temperatures for the various coolers and freezers will be the responsibility of the Food Service Equipment Contractor (section 11 40 00).

PART 11 40 04 - ITEMIZED SPECIFICATIONS

4.1 Schedule of Equipment

- A. Equipment Schedule: Refer to all Contract Documents pertaining to the food service areas. Equipment itemized along with brands and model numbers and salient features establish the standard for construction, operation, and engineering criteria.
- B. Equipment indicated below is intended to establish the standard of quality of the food service equipment. Alternate products by other manufacturers may be considered if equivalent in design, performance, durability, and function.
- C. All alternate items should be submitted prior to bidding. Dealer to fill out and submit form as provided in specifications, exhibit B – “VE & Alternate Product Certification Form”

SECTION 11 40 04 – FOOD SERVICE EQUIPMENT

ALMC – AL PANTRY

ITEM # A100 EXHIBITION STYLE COOKING STATION
Quantity: One (1)
Manufacturer: Kaliber Innovations
Model: MC-59-FPS-G2-R3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model MC-59-FPS-G2-R3 Exhibition Style Cooking Station
2. Mobile Cooking Station with Integrated Induction Appliances, 4 Stage Filtration and built-in Fire Suppression System.
3. One (1) - 3500W Induction Griddle
4. One (1) - 3500W Induction Range
5. One (1) - Integrated UL300 Fire Suppression System
6. Filtration Kit consisting of (2) - Stainless Steel Baffle Filters, (1) - Hi-Temp Pre-Filter, (1) - HEPA Filter, (1) - Carbon Filter
7. Solid stainless-steel construction with P-LAM to match adjacent millwork finishes (select from standard color options, premium selections upcharge)
8. Recommended 170CFM of make-up air supplied to location of unit by low velocity HVAC diffusers for adequate air circulation.
9. Supply Voltage: 208/240VAC, Single Phase, 60Hz, 38Amps, Plug Type: NEMA 6-50P
10. UL710B/NSF-2 Listed
11. Weight: 750lbs
12. 1-year parts & labor warranty
13. Electrician to recess receptacle in wall in order to prevent unit from being pushed out by cord & plug.
14. Electrician to make final alarm connection to building alarm system from dry contacts provided in Ansul control head.
15. After unit is located, Ansul system to be checked and tagged by local Fire Suppression Authorized Dealer. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
16. Installation to be performed by authorized and licensed dealer only.
17. Provide password protection programmed on keypad for safety shutdown and operation of the unit. Time clock to be set at 120 minutes after unit is turned on to automatically power down.
18. Finish: PLAM - Wilsonart Cafelle 7933K-07

ITEM # A100.1 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
3. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube, and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
4. G.C. to provide blocking in wall.

ITEM # A101 SHELVING, WALL MOUNTED
Quantity: One (1)
Manufacturer: Eagle Group
Model: SWS1560-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SWS1560-14/3 Snap-n-Slide® Shelf, wall-mounted, 60"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 225 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A101.1 HEAT LAMP
Quantity: One (1)
Manufacturer: Hatco
Model: GRA-60

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GRA-60 Glo-Ray® Infrared Foodwarmer, 60" W, standard wattage, tubular metal heater rod, single heater rod housing, aluminum construction, 1050 watts, NSF, cULus, Made in USA
2. One (1) Includes 24/7 parts & service assistance
3. One (1) One-year on-site parts & labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. One (1) 120v/60/1-ph
5. One (1) Model BLT TOG-1 (1) Built-in toggle control
6. One (1) Model STANDARD Clear Anodized Aluminum housing, finish, standard

ITEM # A102 WORKTOP FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VWF36HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VWF36HC Worktop Freezer Counter, one-section, 36"W, rear mounted self-contained refrigeration, 8.69 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, stainless steel worktop, door, front & sides, aluminum interior, 4" high foamed in place backsplash, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/2 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 6.0 amps, with cord & plug
6. One (1) Door hinging: standard on right
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard (legs are standard on remote units)

ITEM # A103 COMBI OVEN, ELECTRIC
Quantity: One (1)
Manufacturer: RATIONAL
Model: ICP XS E

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ICP XS E (CA1ERRA.0000211 - E - 208/240V) iCombi Pro® XS Combi Oven, electric, (3) 12" x 14" steam pan or (4) 13" x 18" sheet pan or (3) 2/3 GN pan capacity, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet interface, Wi-Fi enabled, includes (1) bucket of Active Green Cleaner & (1) bucket of Care Tabs, 208/240v/60/1-ph, 5.7 kW, IPX5, UL, cULus, NSF
2. One (1) 2 years parts and labor, 5 years steam generator warranty
3. One (1) Model CAP Chef Assistance Program, a RATIONAL certified Chef conducts 4 hours/location specialized application training with personnel, no charge
4. One (1) Model 9999.2200 RCI RATIONAL Certified Installation, new certified installation for each single electric XS on a stand or counter
5. One (1) Model 9999.2000 Pre-Installation Site Survey ensures that the site has proper space and connections for gas, electric, drain & water, can only be purchased with a Certified Installation, One Site Survey needed for every four (4) cooking systems.
6. One (1) Model 56.01.535 Detergent-Tabs Active Green for RATIONAL, iCombi, 150 pieces/bucket
7. One (1) Model 56.00.562 Care Tablets, bucket of 150 packets for all SelfCooking Center® units from 10/2008, with CareControl - Serial SG, SH or SI series
8. One (1) Model 56.00.598 Rational Defoamer Tabs, for all iCombi Pro, iCombi Classic, SelfCooking Center, and CombiMaster Plus (from 05/2017 onward) units, to reduce foaming in water types subject to severe foam build-up during cleaning, 120 tablets per bucket
9. One (1) Model 6010.2301 Gastronorm Grid Shelf, 2/3 size, 12-3/4" x 13-15/16", stainless steel
10. One (1) Model 60.74.147 Gastronorm Perforated Baking Tray, 2/3 GN, 12-3/4" x 13-15/16", aluminum with TriLax® coating
11. One (1) Model 60.73.802 Diamond & Grill Plate, 1/2 GN
12. One (1) Model 60.73.286 Roasting/Baking Pan, "small set", steel carrier plate (1/1 GN) with 4 pans (diameter 6-1/4"), TriLax® coating
13. One (1) Model 60.73.287 Roasting/Baking Pan, "large set", steel carrier plate (1/1 GN) with 2 pans (diameter 10"), TriLax® coating
14. One (1) Model 6019.1250 CombiFry Basket, 1/2 GN, 12" x 10"
15. Water Supply to have shut-off valve and back flow preventer furnished and installed by plumbing contractor.
16. Water supply to be hard copper tubing from water filter system. Do not direct connect without filter system.
17. Floor Sink to be located in steam free zone - not below combi oven.
18. Electrical contractor to provide shunt trip breaker.
19. FSEC to verify gas type
20. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
21. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software when it is made available.

ITEM # A103.1 VENTLESS EXHAUST SYSTEM
Quantity: One (1)
Manufacturer: RATIONAL
Model: 60.74.407

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 60.74.407 UltraVent® Plus XS Ventless Recirculating Condensation Hood, with HEPA filter for smoke capture, for single or Combi-Duo, includes Combi-Duo adapter kit 60.73.945, 6' cord, NEMA 5-15P, for RATIONAL XS electric combi
2. One (1) Model 9999.2240 RCI RATIONAL Certified Installation, for UltraVent or UltraVent Plus at the time of Certified Unit Installation,
3. This is a recirculating exhaust hood system that captures the steam generated by the oven. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # A103.2 WATER FILTER SYSTEM, COMBI
Quantity: One (1)
Manufacturer: RATIONAL
Model: 1900.1154US

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1900.1154US Water Filtration Single Cartridge System, for any single Combi model or Combi-Duo models XS/XS, 61/61 or 61/101, includes: (1) single head with pressure gauge, R95H filter & filter installation kit
2. One (1) The Rational Water Filtration Systems helps provide consistent high-quality water to your RATIONAL SelfCooking Center or your CombiMaster Plus. The patented carbon block technology reduces the effects of sediment, chloramines and chlorine while providing the required flow rates
3. One (1) All public water systems using surface water and most ground water systems treat with either chlorine/chloramine or chlorine dioxide (EPA will allow levels as high as 4ppm safe for drinking water, exceeding our maximum level of .2ppm.
4. One (1) Chloride concentrations above 80ppm can cause corrosion. RATIONAL Water Filtration does NOT reduce chloride
5. One (1) Model 9999.2271 RCI RATIONAL Certified Installation
6. One (1) Model 1900.1155US Water Filtration Cartridge, replacement or add on with additional Modular Head to Double Cartridge System, includes: (1) R95HF filter
7. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
8. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
9. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
10. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
11. Install filter as per elevations on food service drawings.
12. FSEC to provide a sticker and date of installation on filter cartridges.
13. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
14. For more information see filter installation detail MEP-101.

ITEM # A104 MOBILE BUSSING CART
Quantity: One (1)
Manufacturer: Kaliber Innovations
Model: BC-4036

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BC-4036 Mobile Bussing Cart
2. Dimensions: 37"W x 41.5"H x 24"D
3. Holds 6 bussing pans 21" x 15" x 7" (bussing pans not included)
4. Heavy-duty 5" concealed casters rated at 350 lbs.
5. Integrated pull handles on both sides.
6. Doors open 270 Degrees for easy access.
7. Durable stainless-steel frame.
8. Easy access for cleaning.
9. 12" Clearance between two bottom shelves.
10. Available in any P-LAM Style and Color; non-premium selection
11. Width of the unit with the doors folded down is 38.5".
12. Cart P-LAM finish selection to match adjacent millwork.
13. Finish: PLAM - Wilsonart Cafelle 7933K-07

ITEM # A105 CHEF'S COUNTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Chef's Counter
2. Custom Chefs Counter size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Top shall be fabricated of #14-gauge stainless steel with all edges turned down 2" with 1/2" return. Underside of top shall be reinforced with #14-gauge stainless steel channels. Top shall be of one-piece construction having all corners rounded and have cut-outs to receive all countertop equipment shown on drawing. Field joints shall be kept to a minimum with all traces of welding removed.
4. Top shall be mounted on 1-1/2" x 1-1/2" welded stainless steel framework. Front ends and back of base shall be enclosed with #16-gauge stainless steel panels having all exposed joints continuously welded, ground and polished. Base to be supported on stainless steel legs with adjustable stainless steel bullet feet. Legs shall have a 6" high #16-gauge s/s removable kickplate on all sides.
5. Where drop-in pans are installed in the countertop (hot or cold), provide a recess to allow 18" x 26" pans to set flush with the top.
6. All controls to be installed in aprons.
7. Provide a stainless-steel hinged doors with louvers to allow air circulation at the locations of the refrigerated drop-in pans.
8. Drains are to be manifolded to one end with a ball valve and extended to the nearest acceptable floor drain. Ball valve to be recessed and accessible for operation.
9. Whole unit assembly to be NSF and UL listed.
10. Counter to be integrated with factory pre-wired load center. Stainless-steel fabricator shall interconnect all wiring and receptacles, within counter, to the load center panel, inclusive of all DCR's. All electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I. All interconnections to be done in factory. Electrical Contractor shall interconnect between the load center panel, in the counter, and the electrical supply stub-up. FSEC to provide dimensioned rough-in plan showing ground stub-up location.
11. All built in, drop in and slide in equipment items shall be coordinated and installed by FSEC supplier/installer.
12. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.

ITEM # A105.1 OVERSHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Overshelf
2. FSEC shall furnish and install as a custom fabricated item, size and configuration as shown on drawings and as described here and in the General Specifications Parts.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Construct overshelves and single-sided utensil rack (above hot food wells) of #14 GA s/s; shelves to have 1-1/2" turned down edges all sides to conceal heat lamps.
6. Top of bottom shelf to be 18" above countertop; second shelf to be 16" above first shelf.
7. Provide provisions for heat lamps and Install with controls mounted on heat lamps, including infinite controls, pilot lights and on/off switches.
8. Provide Ticket Rail on chef's side of overhead shelf.
9. FSEC to coordinate installation of double overshelves with heat lamps & lights and all other adjacent and associated equipment.
10. Equipment to be NSF listed and labeled.

ITEM # A105.2 HEAT LAMP
Quantity: Two (2)
Manufacturer: Hatco
Model: GRAH-36D3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model GRAH-36D3 Glo-Ray® Infrared Foodwarmer, 36" W, high wattage, tubular metal heater rod, double header rod housing 3" spacing, aluminum construction, 1600 watts, NSF, cULus, Made in USA
2. One (1) Includes 24/7 parts & service assistance
3. Two (2) One-year on-site parts and labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. Two (2) 120v/60/1-ph
5. Two (2) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle
6. Two (2) Model IND.LGT-2-REM (2) Indicator Lights
7. Two (2) Model LEADS10 6'-10' Extended Electrical Leads
8. Two (2) Model STANDARD Clear Anodized Aluminum, standard

ITEM # A105.3 HOT FOOD WELL UNIT, DROP-IN, ELECTRIC
Quantity: One (1)
Manufacturer: Vollrath
Model: 36501208

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 36501208 Bain Marie Hot Drop-In, electric, top mount, (2) pan capacity, wet operation, thermostatic control (on unit or may be remote mounted with 48" control cord), fully insulated, stainless steel top & interior liner, galvanized exterior housing, 1" drain with ball valve shut off, 208/1ph, 1250 watts, 6 amps, cord with NEMA 6-15P, cULus, NSF, Made in USA
2. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
3. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed. Switch, control enclosure and interconnection by stainless steel fabricator of counter.
4. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
5. FSEC is responsible for coordinating with stainless steel shop drawings and associated equipment, including breath protector.
6. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
7. Drains are to be manifolded to one end with a shut-off ball valve and extended to the nearest acceptable indirect waste floor drain.
8. Drain to be indirect to nearest floor sink, piping, and connection by PC.
9. Owner shall supply pans, bowls, crocks, etc.
10. FSEC to verify quantity and sizes of adapter bars to be used with variety of pans.
11. Equipment to be NSF and UL listed and labeled.

ITEM # A105.4 INDUCTION SOUP RETHERMALIZER, BUILT-IN / DROP-IN
Quantity: Two (2)
Manufacturer: Vollrath
Model: 74701D

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 74701D Mirage® Induction Rethermalizer, drop-in, dry operation, 7 quart, inset with hinged cover, (4) soup presets, stir indicator LED, solid state controls with locking function, temperature control in °F or °C, cabinet mount controls with leads, includes: mounting hardware, cord with NEMA 5-15P, 800 watts, 6.7 amps, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. Two (2) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Six (6) Model 88184 Inset, 7-1/4-quart, induction ready, for Mirage induction rethermalizer, NSF
4. Two (2) Model 4980422 Ergo Grip® Ladle, 4 oz., 3-1/8" bowl dia., 13-1/8"L OAL, equipped with all-natural antimicrobial, 3 oz., stainless steel, 13-1/8" OA length, Kool-Touch™ one-piece black construction offset handle, safe up to 225°F (107.2°C), fully functional to 350°F (176.6°C), integrated handle stopper, Jacob's Pride® Collection, Limited Lifetime Warranty, NSF
5. Two (2) Model 47493 Contemporary Inset Cover, hinged, fits 7 quart inset, easy on/off lid, welded handle, condensation returns to inset, no friction fit tabs for easy installation & removal, dishwasher safe, stainless steel construction, imported
6. Two (2) Model 47491 Decorative Ring, for 7 qt. induction soup drop-in units, 22-gauge stainless steel
7. FSEC to install soup well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
8. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
9. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
10. Equipment to be NSF and UL listed and labeled.
11. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge wire mesh framed insert in doors. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting

ITEM # A105.5 WARMING DRAWER, BUILT-IN
Quantity: One (1)
Manufacturer: Alto-Shaam
Model: 500-1D

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 500-1D Halo Heat® Warming Drawer, built-in, one drawer, digital controller, (1) 12" x 20" pan, (50) rolls or (34) baked potatoes capacity, drawer can adapt to hold optional oversize pan, adjustable thermostat, stainless steel exterior, EcoSmart®, cULus, UL EPH ANSI/NSF 4, CE, EAC
2. One (1) 120v/50/60/1-ph, 5.3 amps, .64 kW, NEMA 5-15P, standard
3. One (1) Non-vented drawers, standard
4. One (1) Model 5015147 Built-In Trim Kit, for 500-1D one drawer warmer
5. Stainless-steel fabricator to trim drawer unit for a flush mount finish installation. Unit should not sit on a shelf or floor with surrounding gaps.

ITEM # A105.6 DUPLEX CONVENIENCE RECEPTACLE
Quantity: Two (2)
Manufacturer: Eagle Group
Model: E18

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model E18 Duplex receptacle & mounting plate (under table)

ITEM # A105.7 TICKET RAIL
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 356902

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 356902 Ticket Rail, 60"W

ITEM # A106 MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP36HC-15B

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP36HC-15B UltraSpec™ Series Big Top Sandwich Prep Table, one-section, 36"W, self-contained, 10.0 cubic feet capacity, (1) self-closing doors, (2) epoxy coated shelves, stainless top with opening for (15) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.2 amps, cord, NEMA 5-15P
6. One (1) Door hinging: standard on right
7. One (1) Model 00C30-099A Door Lock
8. One (1) Roll top cover
9. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # A107 MICROWAVE OVEN
Quantity: One (1)
Manufacturer: ACP
Model: HDC182

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HDC182 Amana® Commercial Microwave Oven, 0.6 cu. ft. capacity, 1800 watts, heavy volume, 4-stage cooking, (11) power levels, (100) memory settings, 60-minute max cooking time, LED display, touch control, interlock safety switch, ADA-compliant Braille touch pads, audible end of cycle signal, side hinged door with tempered glass, sealed ceramic interior shelf, lighted interior, stainless steel exterior & interior, 208-240v/60/1-ph, 14.4 amps, 20 MCA, 3000 watts (total), NEMA 6-20P, cETLus, ETL-Sanitation
2. One (1) 3-year full warranty, standard
3. One (1) Model SB10 Basket, 6" x 12" x 1", non-stick, Teflon, aids in crisping & browning food, (2 per box), suitable for all ACP, Inc. ovens
4. One (1) Model TB10 Basket, non-stick, 10" x 12" x 1", mesh bottom, aids in crisping & browning food, (2 per box), suitable for all ACP Inc. ovens
5. One (1) Model CL10 Amana® Oven Cleaner, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens
6. One (1) Model SH10 Oven Shield, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens,
7. Two (2) Cambro Model 14HP150 H-Pan™ High Heat Hot Food Pan, full size, 4" deep, hi-temp plastic, -40°F to 375°F, non-stick surface, won't bend or dent, amber, NSF
8. Two (2) Cambro Model 10HPCH150 H-Pan™ Food Cover, high heat, full size, flat, with handle, -40°F to 300°F, non-stick surface, won't bend or dent, amber, NSF

ITEM # A108 SPARE NO.

ITEM # A109 SPARE NO.

ITEM # A110 SPARE NO.

ITEM # A111 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T36132STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T36132STEM-BS Spec-Master® Marine Series Worktable, 132"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (8) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end.
3. Provide provisions for item #A111.1, sink, plumbing.

ITEM # A111.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, sink location per plan.

ITEM # A111.2 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant (replaces B-0221-CR-SC)
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # A111.3 SHELVING, WALL MOUNTED
Quantity: Two (2)
Manufacturer: Eagle Group
Model: SWS1560-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SWS1560-14/3 Snap-n-Slide® Shelf, wall-mounted, 60"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 225 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Two (2) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A112 REACH-IN UNDERCOUNTER FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUF27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUF27HC Undercounter Freezer, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/4 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.5 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: on left at factory
7. One (1) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # A113 DROP-IN FREEZER
Quantity: One (1)
Manufacturer: Randell
Model: 9552-290

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 9552-290 Drop-In Freezer/Plate Chiller, 11.2 gallon, top opening with 2 insulated hinged covers, stainless steel interior & top, corrosion resistant steel exterior, self-contained refrigeration system, bottom mount, R290 Hydrocarbon refrigerant, 1/4 HP, UL, cUL, NSF, Made in USA
2. One (1) (1) year parts, labor, and compressor warranty, standard
3. One (1) 115v/60/1-ph, 2.0 amps, 8' cord, NEMA 5-15P, standard
4. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
5. Drain to be indirect to nearest floor sink, piping, and connection by PC.

ITEM # A113.1 DIPPER WELL
Quantity: One (1)
Manufacturer: Server Products
Model: 87770

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 87770 CW-DI, CONSERVEWELL™ DROP-IN UTENSIL HOLDER WITH COUNTDOWN TIMER, keeps utensils above 140°F, features LED display, programmable countdown timer and adjustable alarm volume, drops into most existing dipper well counter cut-outs, 3-3/8"H above countertop, cool touch thermal composite unit, with 5" dia. x 5-1/2" deep stainless steel inset, for use with plastic handled utensils and non-gel-filled dishers, 100 watts, 120v/60/1-ph, 1 amp, cord, NEMA 5-15P, cULus, NSF
2. One (1) 2-Year warranty

ITEM # A114 RACK DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: DH2020N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # A115 ICE & WATER DISPENSER
Quantity: One (1)
Manufacturer: Scotsman
Model: HID312A-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HID312A-1 Meridian™ Ice & Water Dispenser, Touchfree® infrared dispensing, H2 Nugget Ice, air-cooled, production capacity up to 260 lb./24 hours at 70°/50° (225 lb. AHRI certified at 90°/70°), 12 lb. bin storage capacity, sealed maintenance-free bearings, removable bin, removable air filter, SmoothStream™ water dispensing, removable spouts and sink, enlarged 0.8" sink drain, recessed utility chase, stainless steel evaporator and auger, enlarged 11" dispensing area, USB software upgrade port, unit specific QR code, stainless steel exterior, AgION™ antimicrobial protection, R-134a refrigerant, includes 7.5' power cord with NEMA 5-15P plug, 115V/60/1-ph, 7.0 amps, cULus, NSF, CE, engineered and assembled in USA
2. One (1) 3-year parts & labor warranties
3. One (1) 5-year parts on compressor & condenser
4. One (1) Model KLP24A 4" Adjustable legs, plastic with metallic foot for HID models (set of 4)
5. Drain to be indirect to the nearest floor sink, piping, and connection by PC.
6. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
7. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # A116 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000-gallon capacity, 3.34 gpm flow rate, 0.2-micron rating, (2) MC 0.2-micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # A117 SPARE NO.

ITEM # A118 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #A118.1
9. Owner to provide towel & soap dispenser.

ITEM # A118.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # A119 SOILED DISHTABLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: SDTL-60-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SDTL-60-14/ Spec-Master® Soiled Dishtable, straight design, 60"W x 30"D x 43-1/2"H overall, left-to-right operation, 14/304 stainless steel top, 8"H backsplash, 20" x 20" x 5" deep pre-rinse sink with basket drain, (1) deck mount faucet hole for pre-rinse, includes scrap block, raised rolled edges on front & side, stainless steel legs & side bracing, adjustable feet, NSF
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. Five (5) Model E101 Splash 10" (203mm) high - per linear foot
4. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
5. Field verify measurements, adjust table length as necessary to fit field conditions.
6. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
7. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # A119.1 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK Pre-Rinse Unit, 8" wall mount mixing faucet, quarter-turn cerama cartridges with check valves, lever handles, 18" riser, 44" flexible stainless-steel hose, 1.07 GPM spray valve, 6" wall bracket, vacuum breaker (B-090-FEZ), 1/2" NPT male inlets, installation kit, low lead, cCSAus
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A119.2 PRE-RINSE SINK BASKET
Quantity: One (1)
Manufacturer: Eagle Group
Model: 606434

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 606434 Pre-rinse Basket, 17-1/2"W x 19-1/2"L x 2"H, with slide bar, for dishtables, 304 type stainless steel

ITEM # A119.3 DISPOSER
Quantity: One (1)
Manufacturer: Salvajor
Model: 200-SA-WSP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls (HydroLogic control with operator sensor comes standard mounted to SM/PSM models. ONLY add if additional on/off control is required)
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # A119.4 DISPOSER CONTROL PANEL
Quantity: One (1)
Manufacturer: Salvajor
Model: ARSS-LD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Included with item #A119.3, Disposer.
3. Disposer control panel to be mounted by FSEC contractor. Refer to elevations for location - either below stainless-steel top or above with splash provisions. All interconnections to be by FSEC. Final Connection to load center by Electrical contractor.

ITEM # A119.5 DISHTABLE SORTING SHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: 606298

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 606298 Rack Shelf, tubular, wall mounted, 63"W x 15.5"D x 12"H, 1.625"dia. tubing 14/304 stainless steel knock-down construction
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approx. 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A120 DISHWASHER, DOOR TYPE, VENTLESS
Quantity: One (1)
Manufacturer: Hobart
Model: AM15VLT-2

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model AM15VLT-2 Advansys Ventless Dishwashing Machine, door type, tall chamber, energy recovery, hot water sanitize, internal condensing system, 40 racks/hr., straight-thru or corner installation, solid-state controls with digital status, Sense-A-Temp™ 70°F rise booster heater, self-draining stainless steel pump & impeller, electric tank heat, automatic fill, revolving upper and lower wash arms & rinse arms, automatic drain closure, scrap screen and basket, door actuated start, stainless steel tank, tank shelf, chamber, trim panels, frame & feet, 208-240v/60/3-ph, cULus, NSF, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model DOOR LOCK YES with Door lock
4. One (1) Model DWT-AM15 Drain water tempering kit
5. One (1) Installation of DWT kit
6. One (1) Model DISHRAK-COM20 Combination rack
7. One (1) Model DISHRAK-PEG20 Peg rack
8. One (1) Model RACK-6PAN 6 pan rack to hold sheet pans (Tall only)
9. NOTE: This equipment has a built-in condenser system that captures the steam and converts it back to wash water. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # A120.1 WATER FILTER SYSTEM, WAREWASHING
Quantity: One (1)
Manufacturer: Everpure
Model: EV979911

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # A121 CLEAN DISHTABLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CDTR-48-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CDTR-48-14/3 Spec-Master® Clean Dishtable, straight design, 48"W x 30"D x 43-1/2"H overall, left-to-right operation, 14/304 stainless steel top, 8"H backsplash, raised rolled edges on front & side, stainless steel legs & crossbracing, adjustable metal feet, NSF
2. Four (4) Model E101 Splash 10" (203mm) high - per linear foot
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # A121.1 WIRE SHELF, WALL MOUNTED, EPOXY COATED, 2-TIER
Quantity: One (1)
Manufacturer: Metro
Model: 1442NK3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1442NK3 Super Erecta® Shelf, wire, 42"W x 14"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
2. Four (4) Model 1WD14K3 Direct Wall Mount Bracket, for NK3
3. One (1) Model 1442NK3 Super Erecta® Shelf, wire, 42"W x 14"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
5. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
6. FSEC to install shelf approximately 20" above countertop of work surface.
7. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A122 DISH CART / DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: PCD11A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model PCD11A Poker Chip Dish Dolly, 26-5/8"W x 26-5/8"D x 31-15/16"H, adjustable, dish size 4-1/4" to 11-3/4", removable dividers & towers, two-handed access, recessed handles, 5"Dia. swivel casters with neoprene wheels (2 with brakes), chip-resistant polymer shell with Microban® antimicrobial protection, aesthetic blue, vinyl dust/water splash cover, NSF
2. One (1) Model AD11A Poker Chip Dish Dolly Divider (4 each per box)

ITEM # A123 MOBILE HEATED CABINET
Quantity: One (1)
Manufacturer: Metro
Model: C587-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model C587-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet, mobile, 3/4 height, insulated, universal wire slides (13) 18" x 26" or (26) 12" x 20" x 2-1/2" pan capacity, solid doors, top mount digital control, low temp alarm & memory recall, ducted heating system, thermostat 70° to 200°F temp, 1-1/2" adjustable wire slides, 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, ENERGY STAR®
2. One (1) 1-year warranty against manufacturing defects
3. One (1) Right hand hinging, standard
4. One (1) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. One (1) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series

ITEM # A124 REACH-IN FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: FS-1D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FS-1D-S1-HC UltraSpec™ Series Freezer, Reach-in, one-section, self-contained refrigeration, 21.01 cu. ft. capacity, (1) full height solid hinged door, (3) silver freeze (chrome-style) shelves, stainless exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, R290 Hydrocarbon refrigerant, 3/4 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 9.1 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: standard on right
7. Eighteen (18) Type "A" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" pans
8. One (1) 6" Casters, in lieu of standard 6" stainless steel legs

ITEM # A125 S/S WALL FLASHING, DISHROOM
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Dishroom
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # A126 MOBILE BUSSING CART
Quantity: One (1)
Manufacturer: Kaliber Innovations
Model: BC-4036

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BC-4036 Mobile Bussing Cart
2. Dimensions: 37"W x 41.5"H x 24"D
3. Holds 6 bussing pans 21" x 15" x 7" (bussing pans not included)
4. Heavy-duty 5" concealed casters rated at 350 lbs.
5. Integrated pull handles on both sides.
6. Doors open 270 Degrees for easy access.
7. Durable stainless-steel frame.
8. Easy access for cleaning.
9. 12" Clearance between two bottom shelves.
10. Available in any P-LAM Style and Color; non-premium selection
11. Width of the unit with the doors folded down is 38.5".
12. Cart P-LAM finish selection to match adjacent millwork.
13. Finish: PLAM - Wilsonart Cafelle 7933K-07

ITEM # A127 KNIFE SANITIZER
Quantity: One (1)
Manufacturer: Edlund
Model: KSUV-18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KSUV-18 Knife Sterilizer Cabinet, holds up to 12 knives (2 larger slots to accommodate cleavers), LED light indicator, UV filtered plexiglass door with lockable keyed handle, stainless steel, 115v/60/1-ph, 70 watts, NEMA 5-15P, NSF, cETLus
2. One (1) 1-year limited warranty, standard
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support knife sanitizer on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support knife sanitizer.
6. FSEC to install knife sanitizer approximately 20" above countertop of work surface.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A128 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Four (4) Model MQ1848G MetroMax® Q™ Shelf, 48"W x 18"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # A300 JUICE DISPENSER, ELECTRIC, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 37300.0002

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 37300.0002 37300.0002 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses cold water, frozen and ambient products, High Intensity™ mixing technology, push button and portion control, cold water dispense, door lock, juice display, 120v/60/1-ph, 6amps, NEMA 5-15P, NSF, ETL
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # A301 SPARE NO.

ITEM # A302 ICED TEA BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 41400.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 41400.0000 41400.0000 Infusion Series® Iced Tea Brewer, 3- or 5-gallon capacity single brewer (brews 16.3 to 26.7 gallon/hr.), 29" trunk, 3 recipe buttons, digital temperature control, brew counter, pulse interface, energy-saver mode, English & Spanish alphanumeric & advertising display, includes single button graphic overlay & Quickbrew & SplashGard® funnel, brews into BUNN tea dispensers (except TDS-5), 120v/60/1-ph, 1700w, 14amps, NEMA 5-15P, cord attached, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # A302.1 TEA / COFFEE DISPENSER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 34100.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 34100.0000 34100.0000 TDO-4 Iced Tea/Coffee Dispenser, cylinder style, 4-gallon capacity (15.1 litres), sump dispense valve, oval shape solid plastic lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # A303 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 23001.0006

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 23001.0006 23001.0006 CWTF15-APS Airpot Coffee Brewer, automatic, brews 3.8 gallons per hour capacity, digital circuitry with timer function operated by front panel switches, hot water faucet, plastic funnel, accommodates (1) 1.9-to-3.0-liter airpots (sold separately), stainless decor, 120v/60/1-ph, 1370w, 11 amps, NEMA 5-15P
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # A303.1 AIRPOT, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 36725.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 36725.0000 36725.0000 Airpot, 3.8 liter (128 oz.), lever-action, stainless steel liner, 1-pack, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # A400-A401 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: Craftpoint Concepts
Model: CUSTOM

I. Furnish and set-in place per manufacturer's standard specifications:

II. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:
Item A400 – Bussing Counter
Item A400.1 – Pull-out Waste Basket, Single (Rev-A-Shelf, RV-35)
Item A401 – Bussing Counter
Item A401.1 – Pull-out Waste Basket, Single (Rev-A-Shelf, RV-35)
- B. **MANUFACTURER:**
Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com
- C. **SUBSTITUTIONS:**
Substitutions: no substitutions/alternate manufacturers shall be accepted.
- D. **CERTIFICATION:**
AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.
UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.
NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.
- E. **GENERAL CONDITIONS:**
Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.
RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDE BY OTHER TRADES:
1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl, or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.
- F. **DESIGN & SPECIFICATION:**
1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated, and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

III. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASCTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high-speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
 - (1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** Stained Wood Finish or P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.
8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs, and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.

4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The face of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides

IV. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED: FINISHED** - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR: APPLIED PANEL** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR: FINISHED** - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE: TOP STRETCHERS** or **FULL TOP** when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER: FULL TOP** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE: FULL BOTTOM** with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER: FULL BOTTOM** with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS: FULL BACK** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moisture barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer front selections.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **FLAT WOODEN:** Custom Design to be determined by client.
5. **PANELED WOOD:** Custom Design to be determined by client.
6. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transition top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.

2. **DOOR PULLS:** Front of house – 6” standard bar pull & Back of house – 2” standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
3. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
4. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.
5. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
6. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5” black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2” larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
7. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
8. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4”) Baltic Birch plywood core with 0.032” HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by “Spoon” type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4”) Baltic Birch plywood core with 0.032” HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by “Spoon” type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4”) increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
9. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 1/2” unless required by site conditions.
10. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors, or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
11. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
12. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
13. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering); Refer to architectural/interior design documents for finish selections and locations.

14. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 15. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 16. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 17. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
- K. EQUIPMENT INTEGRATION & PROTECTION:**
1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
 2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.
 3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
 4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
 5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
 6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
 7. **AIR FLOW & VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.

L. COORDINATION:

1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.

M. SUBMITTALS:

1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
3. Include MEP sheet if a part of the Scope.
4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
5. Submit samples of exposed material colors and hardware as requested by the architect/owner.

N. JOB CONDITIONS

1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.
4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent, or excessive changes in temperature or humidity level over the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location, and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing, and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or **FLOORS** in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)

11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
 12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
 13. Walls and Partitions (whether framed, demountable or masonry) must be in place.
 14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
 15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
 16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
 17. Elevator, hoist, or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
 18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.
- O. **INSTALLATION, QUALITY ASSURANCE AND WARRANTY:**
1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
 2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
 3. Install and trim millwork to walls, floors, ceiling, and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
 4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
 5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
 6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking, or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care, and maintenance of custom millwork.
 7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # A500 POS PRINTER, SMALLWARES
Quantity: One (1)
Manufacturer: Epson
Model: TM-U220

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TM-U220 POS Printer
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # A501 GLASS RACK, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # A502 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # A503 TRASH CAN, 32-GAL W/DOLLY, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # A504 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # A505 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # A506 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # A507 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # A508 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There are select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # A600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: One (1)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # A700-A704 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
Item #A700 – Floor Sink
Item #A701 – Area Floor Drain
Item #A702 – Floor Sink
Item #A703 – Floor Sink
Item #A704 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

ALMC – MC PANTRY NORTH

ITEM # N100 DISHTABLE, UNDERCOUNTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Dishtable, Undercounter
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # N100.1 TUBULAR RACK SHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Tubular Rack Shelf
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approx. 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # N100.2 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK Pre-Rinse Unit, 8" wall mount mixing faucet, quarter-turn cerama cartridges with check valves, lever handles, 18" riser, 44" flexible stainless-steel hose, 1.07 GPM spray valve, 6" wall bracket, vacuum breaker (B-090-FEZ), 1/2" NPT male inlets, installation kit, low lead, cCSAus
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # N100.3 DISPOSER
Quantity: One (1)
Manufacturer: Salvajor
Model: 200-SA-WSP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls (HydroLogic control with operator sensor comes standard mounted to SM/PSM models. ONLY add if additional on/off control is required)
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # N100.4 DISPOSER CONTROL PANEL
Quantity: One (1)
Manufacturer: Salvajor
Model: ARSS-LD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Disposer control panel to be mounted by FSEC contractor. Refer to elevations for location - either below stainless-steel top or above with splash provisions. All interconnections to be by FSEC. Final Connection to load center by Electrical contractor.
3. Included with item #P115.2, Disposer.

ITEM # N101 DISHWASHER, UNDERCOUNTER
Quantity: One (1)
Manufacturer: Hobart
Model: LXER-2

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LXER-2 Advansys™ Dishwasher, undercounter, 23-15/16"W x 26-13/16"D x 32-1/2"H, high temperature sanitizing, Energy Recovery, 30, 24, 13 Racks/Hour, Fresh Water Rinse, .62 gal/rack, Automated Delime Cycle, Clogged Wash Arm Alert, 3 selectable cycles - light, normal, heavy (Pot & Pan cycle on heavy cycle), Advanced Service Diagnostics, 120/208-240(3W)/60/1, Detergent, Rinse Aid & Delimer Pump, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model CORD-PWRKIT-LXE Power cord kit, for 120/208-240(3w)/60/1 voltage
4. One (1) Model DWT-LXE Drain water tempering kit for LXe
5. One (1) Installation of DWT kit
6. One (1) Model DISHRAK-PEG20 Peg rack
7. One (1) Model DISHRAK-COM20 Combination rack
8. One (1) Model LXEDRLK-W/O-BD Door lock, keeps door locked until condensing cycle is complete
9. NOTE: This equipment has a built-in condenser system that captures the steam and converts it back to wash water. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # N101.1 WATER FILTER SYSTEM, WAREWASHING
Quantity: One (1)
Manufacturer: Everpure
Model: EV979911

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # N102 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Four (4) Model MQ2148G MetroMax® Q™ Shelf, 48"W x 21"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # N103 BUSSING UTILITY TRANSPORT CART, METAL
Quantity: One (1)
Manufacturer: Lakeside Manufacturing
Model: 790

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 790 Bussing Cart, enclosed back & sides, (4) shelf, shelf size 16" x 22", stainless steel shelves & cabinet, stainless steel angle frame with push handle, 5" swivel casters, 500 lb. capacity, Made in USA
2. One (1) 5" swivel casters, standard

ITEM # N104 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #N104.1
9. Owner to provide towel & soap dispenser.

ITEM # N104.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # N105 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3084STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3084STEM-BS Spec-Master® Marine Series Worktable, 84"W x 30"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end
3. Provide provisions for item #N105.1, sink, plumbing.
4. Where top abuts any walls, provide side splash.

ITEM # N105.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, location per plan.

ITEM # N105.2 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant (replaces B-0221-CR-SC)
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # N105.3 SHELVING, WALL MOUNTED
Quantity: Two (2)
Manufacturer: Eagle Group
Model: SWS1524-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SWS1524-14/3 Snap-n-Slide® Shelf, wall-mounted, 24"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 90 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Two (2) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # N106 ICE & WATER DISPENSER
Quantity: One (1)
Manufacturer: Scotsman
Model: HID312A-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HID312A-1 Meridian™ Ice & Water Dispenser, Touchfree® infrared dispensing, H2 Nugget Ice, air-cooled, production capacity up to 260 lb./24 hours at 70°/50° (225 lb. AHRI certified at 90°/70°), 12 lb. bin storage capacity, sealed maintenance-free bearings, removable bin, removable air filter, SmoothStream™ water dispensing, removable spouts and sink, enlarged 0.8" sink drain, recessed utility chase, stainless steel evaporator and auger, enlarged 11" dispensing area, USB software upgrade port, unit specific QR code, stainless steel exterior, AgION™ antimicrobial protection, R-134a refrigerant, includes 7.5' power cord with NEMA 5-15P plug, 115V/60/1-ph, 7.0 amps, cULus, NSF, CE, engineered and assembled in USA
2. One (1) 3-year parts & labor warranties
3. One (1) 5-year parts on compressor & condenser
4. One (1) Model KLP24A 4" Adjustable legs, plastic with metallic foot for HID models (set of 4)
5. Drain to be indirect to the nearest floor sink, piping, and connection by PC.
6. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
7. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # N107 REACH-IN UNDERCOUNTER FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUF27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUF27HC Undercounter Freezer, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/4 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.5 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: on left at factory
7. One (1) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # N108 SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP27HC-08

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP27HC-08 UltraSpec™ Series Sandwich Prep Table, one-section, 27"W, self-contained, 6.77 cubic feet capacity, (1) self-closing door, (2) epoxy coated shelves, stainless top with opening for (8) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/10 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.0 amps, cord, NEMA 5-15P
6. One (1) Door hinging: on left at factory
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # N109 SPARE NO.

ITEM # N110 RAPID COOK OVEN
Quantity: One (1)
Manufacturer: Merrychef USA
Model: E2S HIGH TREND

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E2S HIGH TREND eikon™ Microwave Convection/Impingement Oven, high power, ventless, 12" cooking cavity, EasyTouch™ controls, USB memory, bottom-hinged door, built-in catalytic converter, 'Trend' finish, includes: (1) cook plate "DB0719", (1) paddle "SR318", (1) solid bottom basket "32Z4080", (1) mesh bottom basket "32Z4081", (1) cool down pan "32Z4079", (2) sheet pan liners "32Z4088" & (1) cleaner kit "32Z4148", stainless steel construction, 208/240v/60/1-ph, 30 amps, NEMA 6-30P, NSF, UL EPH Classified, cULus
2. One (1) 1-year parts & labor warranty, standard
3. One (1) Black exterior finish
4. One (1) Model 31Z1335 Menu Key, USB
5. One (1) Model SR318 Guarded Paddle, 16.8" x 11.8" x 2.7", with supporting side walls & handle
6. One (1) Model DB0739 Flat/Flat e2s Cook Plate, 12" x 12.1" x 0.24
7. One (1) Model 32Z4088 Solid Cook Plate Liners, 11.2" x 11.2" x .006", natural, teflon
8. One (1) Model 32Z4096 Non-Stick Cook Plate Liner, green, designed to increase the non-stick capability of the cooking surface (place directly on cook plate)
9. One (1) Model 32Z4080 Teflon Tray, 11" x 11" x .5", solid base, black
10. One (1) Model 32Z4090 Teflon Tray, 11" x 5.5" x .5", solid base, black
11. One (1) Model 32Z4081 Teflon Basket, perforated base, 11" x 11" x .5", black
12. One (1) Model 32Z4123 Teflon Basket, solid bottom, 5.5" x 5.5" x 0.5", red
13. One (1) Model 32Z4144 Oven cleaner, (1) case, includes (6) spray bottles oven cleaner
14. One (1) Model 32Z4145 Oven protector, (1) case, includes (6) spray bottles oven protector
15. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
16. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software, when it is made available.

ITEM # N111 CORNER GUARD, L-SHAPED
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Corner Guard, L-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # N112 RACK DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: DH2020N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # N113 KNIFE SANITIZER
Quantity: One (1)
Manufacturer: Edlund
Model: KSUV-18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KSUV-18 Knife Sterilizer Cabinet, holds up to 12 knives (2 larger slots to accommodate cleavers), LED light indicator, UV filtered plexiglass door with lockable keyed handle, stainless steel, 115v/60/1-ph, 70 watts, NEMA 5-15P, NSF, cETLus
2. One (1) 1-year limited warranty, standard
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support knife sanitizer on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support knife sanitizer.
6. FSEC to install knife sanitizer approximately 20" above countertop of work surface.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # N114 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3072STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3072STEM-BS Spec-Master® Marine Series Worktable, 72"W x 30"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end
3. Where top abuts any walls, provide side splash.

ITEM # N114.1 SHELVING, WALL MOUNTED
Quantity: Four (4)
Manufacturer: Eagle Group
Model: SWS1548-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model SWS1548-14/3 Snap-n-Slide® Shelf, wall-mounted, 48"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 180 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Four (4) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # N115 HOT FOOD WELL TABLE, ELECTRIC
Quantity: One (1)
Manufacturer: Delfield
Model: EHEI48C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EHEI48C E-Chef™ Hot Food Table, Electric, 48" L, (3) 12" x 20" sealed hot food wells with drains, infinite controls, fill faucet (field installation - includes pre-punched faucet holes (left & right) and (2) chrome plugs), 8" poly cutting board, open base, stainless steel plate shelf, top, sides, bottom shelf with 3" rear riser, casters, cUL, UL, NSF
2. One (1) Model 0460000N 1-year parts & labor warranty, standard
3. One (1) 208/230v/60/1-ph, 15.0/16.0 amps, NEMA 6-20P, standard

ITEM # N115.1 TABLE MOUNTED OVERSHELF
Quantity: One (1)
Manufacturer: Delfield
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Table Mounted Overshelf
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.

ITEM # N115.2 HEAT LAMP
Quantity: One (1)
Manufacturer: Hatco
Model: GRAH-36D3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GRAH-36D3 Glo-Ray® Infrared Foodwarmer, 36" W, high wattage, tubular metal heater rod, double heater rod housing 3" spacing, aluminum construction, 1600 watts, NSF, cULus, Made in USA
2. One (1) Includes 24/7 parts & service assistance
3. One (1) One-year on-site parts and labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. One (1) 120v/60/1-ph
5. One (1) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle, shipped loose
6. One (1) Model IND.LGT-2-REM (2) Indicator Lights
7. One (1) Model STANDARD Clear Anodized Aluminum, standard
8. FSEC to be responsible for providing and installing anchors and any other appropriate hardware to support Heat Lamps from ceiling.
9. GC to provide any required blocking above ceiling to properly secure lights
10. FSEC to indicate blocking locations in ceiling if required on blocking sheet of shop drawings.
11. Standard mounting height at 5'-6" AFF placing bottom of heat lamp to be installed 14" above heated surface. Standard cord length is 3'-2", FSEC to verify ceiling height prior to ordering.
12. Electrical Contractor to wire lights to switch mounted on millwork front counter apron. Each lamp to be individually controlled by separate switch.

ITEM # N115.3 TICKET RAIL
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 356902

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 356902 Ticket Rail, 60"W

ITEM # N116 DIPPER WELL
Quantity: One (1)
Manufacturer: Server Products
Model: 87740

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 87740 CW, CONSERVEWELL™ MOUNTED UTENSIL HOLDER, keeps utensils above 140°F, with key slot mounting brackets and (2) short-handled, utensil compartments: 1/9-size, 4" deep stainless steel, pans (90106), for use with plastic handled utensils and non-gel-filled dishers, 400 watts, 120v/60/1-ph, 3.3 amps, cord, NEMA 5-15P, cULus, NSF
2. One (1) 2-Year warranty

ITEM # N117 REACH-IN DUAL TEMP CABINET
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RFS-1D-S1-HD-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RFS-1D-S1-HD-HC UltraSpec™ Series Refrigerator/Freezer, Reach-in, one-section, self-contained refrigeration, 8.99 cu. ft. capacity per section, (2) half height solid hinged doors, (4) silver freeze (chrome-style) wire shelves, stainless steel exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicators, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, top mounted compressors, refrigerator 1/6 HP & freezer 1/2 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 3.0 amps, cord with NEMA 5-15P
6. One (1) 115v/60/1-ph, 7.0 amps, cord with NEMA 5-15P
7. One (1) Door hinging: on left at factory
8. Eighteen (18) Type "A" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" pans
9. One (1) 6" Casters, in lieu of standard 6" stainless steel legs

ITEM # N118 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000-gallon capacity, 3.34 gpm flow rate, 0.2-micron rating, (2) MC 0.2-micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) Note: This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # N300 JUICE DISPENSER, ELECTRIC, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 37300.0002

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 37300.0002 37300.0002 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses cold water, frozen and ambient products, High Intensity™ mixing technology, push button and portion control, cold water dispense, door lock, juice display, 120v/60/1-ph, 6amps, NEMA 5-15P, NSF, ETL
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # N301 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 23001.0006

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 23001.0006 23001.0006 CWTF15-APS Airpot Coffee Brewer, automatic, brews 3.8 gallons per hour capacity, digital circuitry with timer function operated by front panel switches, hot water faucet, plastic funnel, accommodates (1) 1.9-to-3.0-liter airpots (sold separately), stainless decor, 120v/60/1-ph, 1370w, 11 amps, NEMA 5-15P
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # N301.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 42750.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # N302 ICE CREAM DIPPING CABINET, By Vendor
Quantity: One (1)
Manufacturer: Master-Bilt Products
Model: DC-4DSE

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DC-4DSE Ice Cream Dipping Cabinet, dip (5) 3-gallon, store (2) 3 gallon, cold-wall evaporator, stainless steel exterior cabinet, galvanized steel interior, stainless steel top with anti-condensate heater, flip lid, temperature range 10° to -10°F, 1/4 hp, 115v/60/1-ph, 2.7 amps, 9' cord, NEMA 5-15P, cULus, NSF
2. One (1) 2-year parts and labor warranty
3. One (1) 5-year compressor part warranty
4. One (1) Model 44-00471 Lids, double lid, for DC series
5. One (1) Model A039-11140 Casters, 2" dia. (set of 4)
6. G.C. to obtain specifications for equipment supplied by vendor.
7. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
8. Owner shall furnish and install this item, through his vendor.
9. Owner is responsible for verifying manufacturer, model number, size, and components.
10. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
11. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # N500 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # N501 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # N502 GLASS RACK, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # N503 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There are select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # N600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: Three (3)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # N700-N704 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 Item #N700 – Floor Sink
 Item #N701 – Floor Sink
 Item #N702 – Area Floor Drain
 Item #N703 – Floor Sink
 Item #N704 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

ALMC – MC PANTRY SOUTH

ITEM # P100 BUSSING UTILITY TRANSPORT CART, METAL
Quantity: One (1)
Manufacturer: Lakeside Manufacturing
Model: 790

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 790 Bussing Cart, enclosed back & sides, (4) shelf, shelf size 16" x 22", stainless steel shelves & cabinet, stainless steel angle frame with push handle, 5" swivel casters, 500 lb. capacity, Made in USA
2. One (1) 5" swivel casters, standard

ITEM # P101 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3084STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3084STEM-BS Spec-Master® Marine Series Worktable, 84"W x 30"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end
3. Provide provisions for item #P101.1, sink, plumbing.
4. Where top abuts any walls, provide side splash.

ITEM # P101.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, location per plan.

ITEM # P101.2 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant (replaces B-0221-CR-SC)
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # P102 REACH-IN UNDERCOUNTER FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUF27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUF27HC Undercounter Freezer, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/4 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.5 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: standard on right
7. One (1) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # P103 ICE & WATER DISPENSER
Quantity: One (1)
Manufacturer: Scotsman
Model: HID312A-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HID312A-1 Meridian™ Ice & Water Dispenser, Touchfree® infrared dispensing, H2 Nugget Ice, air cooled, production capacity up to 260 lb./24 hours at 70°/50° (225 lb. AHRI certified at 90°/70°), 12 lb. bin storage capacity, sealed maintenance-free bearings, removable bin, removable air filter, removable spouts and sink, enlarged 0.8" sink drain, recessed utility chase, stainless evaporator and auger, enlarged 11" dispensing area, USB software upgrade port, unit specific QR code, stainless exterior, AgION™ antimicrobial protection, R-134a refrigerant, includes 7.5' power cord with NEMA 5-15P plug, 115V/60/1-ph, 7.0 amps, cULus, NSF, CE, engineered and assembled in USA
2. One (1) 3-year parts & labor warranties
3. One (1) 5-year parts on compressor & condenser
4. One (1) Model KLP24A 4" Adjustable legs, plastic with metallic foot for HID models (set of 4)
5. Drain to be indirect to the nearest floor sink, piping, and connection by PC.
6. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
7. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # P104 CORNER GUARD, L-SHAPED
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Corner Guard, L-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # P105 SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP27HC-08

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP27HC-08 UltraSpec™ Series Sandwich Prep Table, one-section, 27"W, self-contained, 6.77 cubic feet capacity, (1) self-closing door, (2) epoxy coated shelves, stainless top with opening for (8) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/10 HP, cULus, UL EPH Classified, UL-Sanititation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.0 amps, cord, NEMA 5-15P
6. One (1) Door hinging: standard on right
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # P106 RAPID COOK OVEN
Quantity: One (1)
Manufacturer: Merrychef USA
Model: E2S HIGH TREND

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E2S HIGH TREND eikon™ Microwave Convection/Impingement Oven, high power, ventless, 12" cooking cavity, EasyTouch™ controls, USB memory, bottom-hinged door, built-in catalytic converter, 'Trend' finish, includes: (1) cook plate "DB0719", (1) paddle "SR318", (1) solid bottom basket "32Z4080", (1) mesh bottom basket "32Z4081", (1) cool down pan "32Z4079", (2) sheet pan liners "32Z4088" & (1) cleaner kit "32Z4148", stainless steel construction, 208/240v/60/1-ph, 30 amps, NEMA 6-30P, NSF, UL EPH Classified, cULus
2. One (1) 1-year parts & labor warranty, standard
3. One (1) Black exterior finish
4. One (1) Model 31Z1335 Menu Key, USB
5. One (1) Model SR318 Guarded Paddle, 16.8" x 11.8" x 2.7", with supporting side walls & handle
6. One (1) Model DB0739 Flat/Flat e2s Cook Plate, 12" x 12.1" x 0.24
7. One (1) Model 32Z4088 Solid Cook Plate Liners, 11.2" x 11.2" x .006", natural, teflon
8. One (1) Model 32Z4096 Non-Stick Cook Plate Liner, green, designed to increase the non-stick capability of the cooking surface
9. One (1) Model 32Z4080 Teflon Tray, 11" x 11" x .5", solid base, black
10. One (1) Model 32Z4090 Teflon Tray, 11" x 5.5" x .5", solid base, black
11. One (1) Model 32Z4081 Teflon Basket, perforated base, 11" x 11" x .5", black
12. One (1) Model 32Z4123 Teflon Basket, solid bottom, 5.5" x 5.5" x 0.5", red
13. One (1) Model 32Z4144 Oven cleaner, (1) case, includes (6) spray bottles oven cleaner
14. One (1) Model 32Z4145 Oven protector, (1) case, includes (6) spray bottles oven protector
15. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
16. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software, when it is made available.

ITEM # P107 HOT FOOD WELL TABLE, ELECTRIC
Quantity: One (1)
Manufacturer: Delfield
Model: EHEI48C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EHEI48C E-Chef™ Hot Food Table, Electric, 48" L, (3) 12" x 20" sealed hot food wells with drains, infinite controls, fill faucet (field installation - includes pre-punched faucet holes (left & right) and (2) chrome plugs), 8" poly cutting board, open base, stainless steel plate shelf, top, sides, bottom shelf with 3" rear riser, casters, cUL, UL, NSF
2. One (1) Model 0460000N 1-year parts & labor warranty, standard
3. One (1) 208/230v/60/1-ph, 15.0/16.0 amps, NEMA 6-20P, standard

ITEM # P107.1 TABLE MOUNTED OVERSHELF
Quantity: One (1)
Manufacturer: Delfield
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Table Mounted Overshelf
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.

ITEM # P107.2 HEAT LAMP
Quantity: One (1)
Manufacturer: Hatco
Model: GRAH-36D3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GRAH-36D3 Glo-Ray® Infrared Foodwarmer, high wattage, tubular metal heater rod, double heater rod housing 3" spacing, aluminum construction, 1600 watts, NSF, cUL, UL
2. One (1) Includes 24/7 parts & service assistance
3. One (1) One-year on-site parts and labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. One (1) 120v/60/1-ph
5. One (1) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle, shipped loose
6. One (1) Model IND.LGT-2-REM (2) Indicator Lights
7. One (1) Model STANDARD Clear Anodized Aluminum, standard
8. FSEC to be responsible for providing and installing anchors and any other appropriate hardware to support Heat Lamps from ceiling.
9. GC to provide any required blocking above ceiling to properly secure lights
10. FSEC to indicate blocking locations in ceiling if required on blocking sheet of shop drawings.
11. Standard mounting height at 5'-6" AFF placing bottom of heat lamp to be installed 14" above heated surface. Standard cord length is 3'-2", FSEC to verify ceiling height prior to ordering.
12. Electrical Contractor to wire lights to switch mounted on millwork front counter apron. Each lamp to be individually controlled by separate switch.

ITEM # P107.3 TICKET RAIL
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 356902

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 356902 Ticket Rail, 60"W

ITEM # P108 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3072SEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3072SEM-BS Spec-Master® Marine Series Worktable, 72"W x 30"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, left end
3. Where top abuts any walls, provide side splash.

ITEM # P108.1 SHELIVING, WALL MOUNTED
Quantity: Four (4)
Manufacturer: Eagle Group
Model: SWS1548-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model SWS1548-14/3 Snap-n-Slide® Shelf, wall-mounted, 48"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 180 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Four (4) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P109 KNIFE SANITIZER
Quantity: One (1)
Manufacturer: Edlund
Model: KSUV-18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KSUV-18 Knife Sterilizer Cabinet, holds up to 12 knives (2 larger slots to accommodate cleavers), LED light indicator, UV filtered plexiglass door with lockable keyed handle, stainless steel, 115v/60/1-ph, 70 watts, NEMA 5-15P, NSF, cETLus
2. One (1) 1-year limited warranty, standard
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support knife sanitizer on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support knife sanitizer.
6. FSEC to install knife sanitizer approximately 20" above countertop of work surface.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P110 REACH-IN DUAL TEMP CABINET
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RFS-1D-S1-HD-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RFS-1D-S1-HD-HC UltraSpec™ Series Refrigerator/Freezer, Reach-in, one-section, self-contained refrigeration, 8.99 cu. ft. capacity per section, (2) half height solid hinged doors, (4) silver freeze (chrome-style) wire shelves, stainless steel exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicators, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, top mounted compressors, refrigerator 1/6 HP & freezer 1/2 HP, cULus, UL EPH Classified, UL-Sanititation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 3.0 amps, cord with NEMA 5-15P
6. One (1) 115v/60/1-ph, 7.0 amps, cord with NEMA 5-15P
7. One (1) Door hinging: standard on right
8. Eighteen (18) Type "A" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" pans
9. One (1) 6" Casters, in lieu of standard 6" stainless steel legs

ITEM # P111 DISHWASHER, UNDERCOUNTER
Quantity: One (1)
Manufacturer: Hobart
Model: LXER-2

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LXER-2 Advansys™ Dishwasher, undercounter, 23-15/16"W x 26-13/16"D x 32-1/2"H, high temperature sanitizing, Energy Recovery, 30, 24, 13 Racks/Hour, Fresh Water Rinse, .62 gal/rack, Automated Delime Cycle, Clogged Wash Arm Alert, 3 selectable cycles - light, normal, heavy (Pot & Pan cycle on heavy cycle), Advanced Service Diagnostics, 120/208-240(3W)/60/1, Detergent, Rinse Aid & Delimer Pump, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model CORD-PWRKIT-LXEH Power Cord Kit, for LXeH & LXeR, 120/208-240v(3w)/60/1-ph, NEMA 14-50P plug included
4. One (1) Model DWT-LXE Drain water tempering kit for LXe
5. One (1) Installation of DWT kit
6. One (1) Model DISHRAK-PEG20 Peg rack
7. One (1) Model DISHRAK-COM20 Combination rack
8. One (1) Model LXEDRLK-W/O-BD Door lock, keeps door locked until condensing cycle is complete
9. NOTE: This equipment has a built-in condenser system that captures the steam and converts it back to wash water. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # P111.1 WATER FILTER SYSTEM, WAREWASHING
Quantity: One (1)
Manufacturer: Everpure
Model: EV979911

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # P112 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Four (4) Model MQ2130G MetroMax® Q™ Shelf, 30"W x 21"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # P113 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000-gallon capacity, 3.34 gpm flow rate, 0.2-micron rating, (2) MC 0.2-micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) Note: This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # P114 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #P114.1
9. Owner to provide towel & soap dispenser.

ITEM # P114.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # P115 DISHTABLE, UNDERCOUNTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Dishtable, Undercounter
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # P115.1 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK Pre-Rinse Unit, 8" wall mount mixing faucet, quarter-turn cerama cartridges with check valves, lever handles, 18" riser, 44" flexible stainless-steel hose, 1.07 GPM spray valve, 6" wall bracket, vacuum breaker (B-090-FEZ), 1/2" NPT male inlets, installation kit, low lead, cCSAus
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P115.2 DISPOSER
Quantity: One (1)
Manufacturer: Salvajor
Model: 200-SA-WSP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls (HydroLogic control with operator sensor comes standard mounted to SM/PSM models. ONLY add if additional on/off control is required)
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # P115.3 DISPOSER CONTROL PANEL
Quantity: One (1)
Manufacturer: Salvajor
Model: ARSS-LD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Disposer control panel to be mounted by FSEC contractor. Refer to elevations for location - either below stainless-steel top or above with splash provisions. All interconnections to be by FSEC. Final Connection to load center by Electrical contractor.
3. Included with item #P115.2, Disposer.

ITEM # P115.4 TUBULAR RACK SHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Tubular Rack Shelf
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approx. 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P116 DIPPER WELL
Quantity: One (1)
Manufacturer: Server Products
Model: 87740

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 87740 CW, CONSERVEWELL™ MOUNTED UTENSIL HOLDER, keeps utensils above 140°F, with key slot mounting brackets and (2) short-handled, utensil compartments: 1/9-size, 4" deep stainless steel, pans (90106), for use with plastic handled utensils and non-gel-filled dishers, 400 watts, 120v/60/1-ph, 3.3 amps, cord, NEMA 5-15P, cULus, NSF
2. One (1) 2 Year warranty

ITEM # P117 RACK DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: DH2020N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # P300 JUICE DISPENSER, ELECTRIC, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 37300.0002

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 37300.0002 37300.0002 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses cold water, frozen and ambient products, High Intensity™ mixing technology, push button and portion control, cold water dispense, door lock, juice display, 120v/60/1-ph, 6amps, NEMA 5-15P, NSF, ETL
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # P301 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 23001.0006

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 23001.0006 23001.0006 CWTF15-APS Airpot Coffee Brewer, automatic, brews 3.8 gallons per hour capacity, digital circuitry with timer function operated by front panel switches, hot water faucet, plastic funnel, accommodates (1) 1.9-to-3.0-liter airpots (sold separately), stainless decor, 120v/60/1-ph, 1370w, 11 amps, NEMA 5-15P
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping, and connection by Plumbing Contractor.

ITEM # P301.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 42750.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # P302 ICE CREAM DIPPING CABINET, By Vendor
Quantity: One (1)
Manufacturer: Master-Bilt Products
Model: DC-4DSE

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DC-4DSE Ice Cream Dipping Cabinet, dip (5) 3-gallon, store (2) 3 gallon, cold-wall evaporator, stainless steel exterior cabinet, galvanized steel interior, stainless steel top with anti-condensate heater, flip lid, temperature range 10° to -10°F, 1/4 hp, 115v/60/1-ph, 2.7 amps, 9' cord, NEMA 5-15P, cULus, NSF
2. One (1) 2-year parts and labor warranty
3. One (1) 5-year compressor part warranty
4. One (1) Model 44-00471 Lids, double lid, for DC series
5. One (1) Model A039-11140 Casters, 2" dia. (set of 4)
6. G.C. to obtain specifications for equipment supplied by vendor.
7. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
8. Owner shall furnish and install this item, through his vendor.
9. Owner is responsible for verifying manufacturer, model number, size, and components.
10. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
11. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # P500 GLASS RACK, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # P501 SPARE NO.

ITEM # P502 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P503 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # P504 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There are select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # P600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: Three (3)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # P700-P704 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 Item #P700 – Area Floor Drain
 Item #P701 – Floor Sink
 Item #P702 – Floor Sink
 Item #P703 – Floor Sink
 Item #P704 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

IL – PANTRY

ITEM # P100 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3060STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3060STEM-BS Spec-Master® Marine Series Worktable, 60"W x 30"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #P100.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # P100.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, location per plan.

ITEM # P100.2 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant (replaces B-0221-CR-SC)
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # P100.3 SHELVING, WALL MOUNTED
Quantity: One (1)
Manufacturer: Eagle Group
Model: SWS1560-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SWS1560-14/3 Snap-n-Slide® Shelf, wall-mounted, 60"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 225 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P100.4 SHELVING, WALL MOUNTED
Quantity: One (1)
Manufacturer: Eagle Group
Model: SWS1536-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SWS1536-14/3 Snap-n-Slide® Shelf, wall-mounted, 36"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 135 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P101 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000-gallon capacity, 3.34 gpm flow rate, 0.2-micron rating, (2) MC 0.2-micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) Note: This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # P102 SPARE NO.

ITEM # P103 ROLL-IN REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RIS-1D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RIS-1D-S1-HC UltraSpec™ Series Refrigerator, Roll-in, one-section, self-contained refrigeration, 34.86 cu. ft. capacity, stainless exterior & interior, standard depth cabinet, (1) full height 20-gauge stainless steel door, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2-year warranty, stainless steel breakers, stainless steel ramp, 1/3 HP, cULus, UL-Sanitation, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 6.5 amps, cord with NEMA 5-15P
6. One (1) Door hinging: standard on right

ITEM # P103.1 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: AXD1818

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model AXD1818 Bun Pan Rack, LifeTime Tough, EXTRA Heavy-Duty Series, 22"W x 26"D x 64"H, Aluminum Construction, End Load, 3" Angle Spacing, (18) 18" x 26" or (36) 13" x 18" pans (2 per shelf), 5" x 2" Heavy-Duty Swivel Plate Casters w/ Zerk Grease Fitting model # CPS25U, Made in USA, NSF
2. One (1) Lifetime warranty for traditional foodservice applications
3. One (1) Model /015 Accessories, Pan Stop - Web-Strap
4. One (1) Model /5B Accessories, Caster Brakes, Heavy-Duty (Set of 2)
5. FSEC to verify that racks will fit roll-in (item number #P103) properly.

ITEM # P104 SPARE NO.

ITEM # P105 SPARE NO.

ITEM # P106 3-BOWL COMPARTMENT SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM 3-Bowl Compartment Sink
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Vendor to provide Chemical Sanitizing Agent System (Pre-Wash, Rinse, Sanitize). Sinks should be clearly labeled showing water lines and cleaning stage.
6. Where top abuts any walls, provide side splash.

ITEM # P106.1 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # P106.2 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0113-CR-BJ-ST

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0113-CR-BJ-ST EasyInstall Pre-Rinse Faucet, deck mount, single hole base, 1.07 GPM swivel spray valve (B-0107-J), 44" flexible stainless-steel hose, 24" riser, 18" flexible supply lines, 6" wall bracket, quarter-turn Cerama cartridges, accessory tee, low lead, 2019 DOE PRSV - Class II
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P106.3 DRAIN, LEVER / TWIST WASTE
Quantity: Three (3)
Manufacturer: T&S Brass
Model: B-3940

Furnish and set-in place per manufacturer's standard specifications:

1. Three (3) Model B-3940 Waste Valve, twist handle, 3" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # P106.4 WIRE RACK, EPOXY COATED, WALL MOUNT, 1-TIER
Quantity: Two (2)
Manufacturer: Metro
Model: 1436NK3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 1436NK3 Super Erecta® Shelf, wire, 36"W x 14"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
2. Four (4) Model 1WD14K3 Direct Wall Mount Bracket, for NK3
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P107 SPARE NO.

ITEM # P108 SPARE NO.

ITEM # P109 SPARE NO.

ITEM # P110 CLEAN DISHTABLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CDTL-60-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CDTL-60-14/3 Spec-Master® Clean Dishtable, straight design, 60"W x 30"D x 43-1/2"H overall, right-to-left operation, 14/304 stainless steel top, 8"H backsplash, raised rolled edges on front & side, stainless steel legs & crossbracing, adjustable metal feet, NSF
2. Five (5) Model E101 Splash 10" (203mm) high - per linear foot
3. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Field verify measurements, adjust table length as necessary to fit field conditions.
5. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
6. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # P110.1 WIRE SHELF, WALL MOUNTED, EPOXY COATED, 1-TIER
Quantity: One (1)
Manufacturer: Metro
Model: 1442NK3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1442NK3 Super Erecta® Shelf, wire, 42"W x 14"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
2. Two (2) Model 1WD14K3 Direct Wall Mount Bracket, for NK3
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P111 DISHWASHER, DOOR TYPE, VENTLESS
Quantity: One (1)
Manufacturer: Hobart
Model: AM15VLT-2

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model AM15VLT-2 Ventless Door Type Dishwasher, Energy Recovery, tall chamber, hot water sanitize, internal condensing system, 40 racks/hr., straight-thru or corner, solid-state controls with digital status, booster heater, electric tank heat, auto-fill, stainless steel tank, doors & feet, 208-240/60/3, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model DOOR LOCK YES with Door lock
4. One (1) Model SPEC-KIT Single point electrical connect AM15 kit; field installation required - 3 phase booster machines
5. One (1) Model DWT-AM15 Drain water tempering kit
6. One (1) Installation of DWT kit
7. One (1) Model DISHRAK-COM20 Combination rack
8. One (1) Model DISHRAK-PEG20 Peg rack
9. One (1) Model RACK-6PAN 6 pan rack to hold sheet pans
10. One (1) Delime notification available
11. NOTE: This equipment has a built-in condenser system that captures the steam and converts it back to wash water. HVAC to consider amount of heat this equipment produces and add additional HVAC exhaust located above unit to pull hot air out and circulate air in space.

ITEM # P111.1 WATER FILTER SYSTEM, WAREWASHING
Quantity: One (1)
Manufacturer: Everpure
Model: EV979911

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # P112 SOILED DISHTABLE, 'L' SHAPE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Soiled Dishtable, 'L' Shape
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, left end
3. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
4. Nine (9) Model E101 Splash 10" (203mm) high - per linear foot
5. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
6. Field verify measurements, adjust table length as necessary to fit field conditions.
7. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
8. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # P112.1 DOUBLE SIDED SORTING SHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Double Sided Sorting Shelf
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Equipment to be NSF listed and labeled.
6. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
7. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
8. FSEC to install shelf approx. 20" above countertop of work surface.
9. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
10. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P112.2 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK Pre-Rinse Unit, 8" wall mount mixing faucet, quarter-turn cerama cartridges with check valves, lever handles, 18" riser, 44" flexible stainless-steel hose, 1.07 GPM spray valve, 6" wall bracket, vacuum breaker (B-090-FEZ), 1/2" NPT male inlets, installation kit, low lead, cCSAus
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P112.3 PRE-RINSE SINK BASKET
Quantity: One (1)
Manufacturer: Eagle Group
Model: 606434

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 606434 Pre-rinse Basket, 17-1/2"W x 19-1/2"L x 2"H, with slide bar, for dishtables, 304 type stainless steel

ITEM # P112.4 DISPOSER
Quantity: One (1)
Manufacturer: Salvajor
Model: 200-SA-WSP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls (HydroLogic control with operator sensor comes standard mounted to SM/PSM models. ONLY add if additional on/off control is required)
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # P112.5 DISPOSER CONTROL PANEL
Quantity: One (1)
Manufacturer: Salvajor
Model: ARSS-LD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Included with item #P112.4, Disposer.
3. Disposer control panel to be mounted by FSEC contractor. Refer to elevations for location - either below stainless-steel top or above with splash provisions. All interconnections to be by FSEC. Final Connection to load center by Electrical contractor.

ITEM # P113 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #P113.1
9. Owner to provide towel & soap dispenser.

ITEM # P113.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # P114 CORNER GUARD, U-SHAPED
Quantity: Two (2)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model CUSTOM Corner Guard, U-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # P115 SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP48HC-12

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP48HC-12 UltraSpec™ Series Sandwich Prep Table, two-section, 48"W, self-contained, 13.0 cubic feet capacity, (2) self-closing doors, (4) epoxy coated shelves, stainless top with opening for (12) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.2 amps, cord, NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # P115.1 SANDWICH PREP OVERSHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Sandwich Prep Overshelf
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.

ITEM # P116 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #P116.1
9. Owner to provide towel & soap dispenser.

ITEM # P116.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # P117 RAPID COOK OVEN
Quantity: One (1)
Manufacturer: Merrychef USA
Model: E2S HIGH TREND

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E2S HIGH TREND eikon™ Microwave Convection/Impingement Oven, high power, ventless, 12" cooking cavity, EasyTouch™ controls, USB memory, bottom-hinged door, built-in catalytic converter, 'Trend' finish, includes: (1) cook plate "DB0719", (1) paddle "SR318", (1) solid bottom basket "32Z4080", (1) mesh bottom basket "32Z4081", (1) cool down pan "32Z4079", (2) sheet pan liners "32Z4088", (1) USB menu key & (1) cleaner kit "32Z4058", stainless steel construction, 208/240v/60/1-ph, 30 amps, NEMA 6-30P, NSF, UL EPH Classified, cULus
2. One (1) 1-year parts & labor warranty, standard
3. One (1) Black exterior finish
4. One (1) Model 31Z1335 Menu Key, USB
5. One (1) Model SR318 Guarded Paddle, 16.8" x 11.8" x 2.7", with supporting side walls & handle
6. One (1) Model DB0739 Flat/Flat e2s Cook Plate, 12" x 12.1" x 0.24"
7. One (1) Model 32Z4088 Solid Cook Plate Liners, 11.2" x 11.2" x .006", natural, teflon
8. One (1) Model 32Z4096 Non-Stick Cook Plate Liner, green, designed to increase the non-stick capability of the cooking surface (place directly on cook plate)
9. One (1) Model 32Z4080 Teflon Tray, 11" x 11" x .5", solid base, black
10. One (1) Model 32Z4090 Teflon Tray, 11" x 5.5" x .5", solid base, black
11. One (1) Model 32Z4081 Teflon Basket, perforated base, 11" x 11" x .5", black
12. One (1) Model 32Z4123 Teflon Basket, solid bottom, 5.5" x 5.5" x 0.5", red
13. One (1) Model 32Z4144 Oven cleaner, (1) case, includes (6) spray bottles oven cleaner
14. One (1) Model 32Z4145 Oven protector, (1) case, includes (6) spray bottles oven protector
15. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
16. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software, when it is made available.

ITEM # P118 WORKTOP FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VWF48HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VWF48HC Worktop Freezer Counter, two-section, 48"W, rear mounted self-contained refrigeration, 11.04 cubic feet capacity, (2) self-closing doors, (4) epoxy coated wire shelves, full electronic control, stainless steel worktop, door, front & sides, aluminum interior, 4" high foamed in place backsplash, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/2 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 7.0 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # P120 CORNER GUARD, L-SHAPED
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Corner Guard, L-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # P121 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Twelve (12) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Six (6) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Six (6) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2442G MetroMax® Q™ Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. Six (6) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
8. Two (2) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
9. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
10. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # P122 CORNER GUARD, L-SHAPED
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Corner Guard, L-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # P123 CORNER GUARD, L-SHAPED
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Corner Guard, L-Shaped
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Bottom of guards to sit on integral flooring cove base and are to extend 60" high.
4. Secure wall guards to building wall with wall panel adhesive of proper type for wall construction.
5. Seal end seams with General Electric clear silicone sealer.
6. Refer to Food Service Design Documents Typical Installation Sheet Detail FAB-25 for further information.

ITEM # P124 SPARE NO.

ITEM # P125 SPARE NO.

ITEM # P126 SPARE NO.

ITEM # P127 SPARE NO.

ITEM # P128 DUNNAGE RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: ES2036

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ES2036 Dunnage Rack, Tubular Dunnage Rack, Stainless Series, 36"W x 20"D x 12"H, Stainless Steel Construction, (4,000) lb. distributed weight capacity per shelf, Made in USA, NSF
2. One (1) Lifetime warranty for traditional foodservice applications

ITEM # P129 SPARE NO.

ITEM # P130 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Twelve (12) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Six (6) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Six (6) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2436G MetroMax® Q™ Shelf, 36"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2436F MetroMax® i Shelf, 36"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. Three (3) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
8. One (1) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
9. Six (6) Model MQ2460G MetroMax® Q™ Shelf, 60"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 600 lb. capacity per shelf, NSF
10. Two (2) Model MX2460F MetroMax® i Shelf, 60"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 750 lb. capacity per shelf, NSF
11. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
12. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # P131 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3048STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3048STEM-BS Spec-Master® Marine Series Worktable, 48"W x 30"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, left end
3. Where top abuts any walls, provide side splash.

ITEM # P132 WORKTOP FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VWF27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VWF27HC Worktop Freezer Counter, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, stainless steel worktop, door, front & sides, aluminum interior, 4" high foamed in place backsplash, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/4 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.5 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: on left at factory
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # P133 RACK DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: DH2020N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # P134 EXHAUST HOOD
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. **CONSTRUCTION:**
Ventilators to be constructed of #18-gauge, type 304 stainless-steel. Ventilators to have an all-welded exterior, ground and polished. Ventilators are ETL Listed to UL Standards, ETL Sanitation Listed, and built-in compliance with NFPA pamphlet No. 96, BOCA, ICBO and SBCCI
Provide a concealed, full length grease trough, accessible from the top for cleaning, with removable, concealed grease cup on one end.
Provide insulation on all exposed sides (recommended when supply air is below 55° F).
Provide make-up air through a front plenum, installed in ceiling, at front of hood. Make-up air shall consist of duct collars, air volume and fire dampers, plenum, air diffuser baffle and ceiling installed discharge registers. Hood shall be designed and installed to automatically activate exhaust fan(s) whenever cooking operations occur. Activation of exhaust fan(s) shall occur through an interlock with cooking appliances, by means of thermostatic heat sensors or by means of other approved methods.
4. **CONTROLS/SWITCHES:**
FSEC shall provide an EMS – Energy Management System control panel with light and fan switches, wall mounted, in a location near hood and shall be easily accessible and factory pre-wired. Electrical Contractor to interconnect to fire suppression system and fan(s). Location of control panel/switches shall be verified before installation.
Room Temperature Sensor - Room temperature sensor is used to automatically activate fans when temperature in the exhaust duct exceeds 15 degrees Fahrenheit of room temperature.
Mounting and wiring of room temperature sensor to control panel to be done by Electrical Contractor. Two strand 18 AWG thermostat wire provided by Captive-Aire. Room temperature sensor to be field installed in a safe location free of influence from external heat sources. Do not install room temperature sensor on an external wall. Temp sensor to be located between 5-25' distance from hood.
5. **LIGHTS:**
Provide each ventilator with UL listed Component Hardware recessed 4' LED light fixture, #L82-1040-L22N wired to a main junction box. 22 Watts.
6. **DUCTWORK:**
Exhaust and supply duct collars to extend 6 above the finished ceiling for connection to overhead ductwork. Ductwork to be furnished and installed by the HVAC contractor.
Duct collars to be shipped loose for positioning in field and clearing any obstructions allowing flexibility during installation.
7. **FANS:**
Exhaust and supply air system shall be provided with proper air quantities and velocities for proper exhaust extraction and to maintain a balanced condition within the exhaust hood and surrounding building environment. See hood sheets for CFM requirements.
Exhaust and supply fans to be furnished and installed by the HVAC contractor.
8. **FILTERS:**
Furnish easily removable filters. Horizontal baffles to extract and retain grease out of the air stream. Filters to be Stainless Steel High Efficiency Baffle Filter with Handles and Bottom Hanging Hook, UL Classified. Particulate Capture efficiency, 93%, efficient at 9 microns, 74% efficient at 5 microns. NSF approved.

9. **WALL PANELS:**
Furnish and install 22-gauge stainless-steel wall panels extending from the bottom of the rear of the exhaust hood to the upper edge of the baseboard molding and extending along the full length of all wall surfaces (left, right and rear). Wall panel sections shall be joined with stainless steel divider bars to allow panel sections to fit tightly against the wall and to result in watertight seams. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction. Seal end seams with General Electric clear silicone sealer. Wall panels to be insulated if applied to combustible material.
10. **TRIM:**
FSEC to furnish and install 18-gauge s/s enclosures from top of ventilators to the finished ceiling along all exposed sides, both ends and underside above stub wall to enclose spaces. Verify height of enclosure trim in field.
11. **FINISHES:**
Hoods are specified with decorative finish, hood to be provided with 1" insulated standoff with decorative finishes as specified on all exposed sides. This is to provide a 0" clearance rating per hood manufacturer listing. If the intent is to cover the hood with decorative stainless, laminate, or other panels, this material can be applied directly to the hood using adhesive or fasteners under 1" in length. Decorative finish to be supplied and installed by FSEC.
When installing a large or heavier surround such as tile, coordinate a soffit to be dropped around the hood. This will better support the weight of the cement board and tile. Soffit and tile to be provided and installed by GC. Refer to architectural details.
Refer to "EXH-13 - Hood - Decorative Fascia Finish Detail" for additional information.
12. **FIRE PROTECTION SYSTEM:**
Fire Cabinet, to house fire suppression system and hood controls. FSEC to verify which side of hood and ensure cabinet doors clear for opening.
Hood to be pre-piped for Ansul Fire Protection System, Item #P131.2, there should be no field cutting or modifications to hood.
FSEC is responsible for coordinating installation with Fire Protection System, and cooking equipment.
13. **INSTALLATION:**
Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with 1/2" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
14. **COORDINATION:**
FSEC to coordinate final hood design with HVAC engineers and Contractor to ensure adequate space allocation for hood and verification of duct connection points, clearance above hood, etc.
If combustible surfaces exist above the hood - provide 3M insulated stainless steel panel installed above hood for clearance compliance to combustible surfaces. Insulated panel to extend 18" past hood on sides and front.
FSEC to verify rough and finish ceiling heights for final hood dimensions and trim requirements.
Applicable trades shall connect building rough ins to hood control cabinet and hood and make all necessary interconnections from the control cabinet to the hood and fans.
Structural engineer shall be responsible for reviewing all hood information and shop drawings and providing an appropriate support structure.

15. **SYSTEM DESIGN VERIFICATION (NOT OPTIONAL):**

After completion of the hood installation and utility connections by site trades, Food Service Equipment Contractor shall secure CAS - "Captive Air Systems" Service to perform a System Design Verification (SDV). The SDV will be performed after all inspections are complete. Any field related discrepancies that are discovered during the SDV will be brought to the attention of Food Service Equipment Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer at no cost. If CAS Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by CAS Services or direct respective trades to remedy those issues.

ITEM # P134.1	WALL MOUNTED CONTROL CABINET
Quantity:	One (1)
Manufacturer:	Captive-Aire
Model:	CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Wall Mounted Control Cabinet
2. **HOOD CONTROL PANEL**
MANUFACTURER: CAPTIVE-AIRE
MODEL: DCV-I 1 1 1
3. **FEATURES:**
DCV-1111 Demand Control Ventilation, w/ 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY THREE PHASE MOTOR REQUIRED to be sized by MEP engineers and provided by mechanical engineer. Room temperature sensor shipped loose for field installation. Dealer to verify distance between VFD and Motor and provide appropriate length.
Control package Includes 4 Duct Thermostat kits. – ESV371N02YXBS71 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS – ESV371N02YXB571 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA I Enclosure, with 2RJ-45 FOR MODBUS – 20 wide XI 8 tall X8.62 deep SS HINGED ELECTRICAL BOX NEMA I – VENTED. Install out of site/view from front of the house and in a recessed wall when possible. Do Not block ventilation ports and provide clearance around the enclosure.
Digital Prewire Lighting Relay Kit. Includes hood lighting relay & terminal blocks. Allows for up to 1400W of lighting each. – Thermistor CABLE – 18/2 AWG GREEN WHITE, plenum rated. USED for thermistor duct stat.
4. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each control package and additional construction information.

ITEM # P134.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by the Food Service Equipment Contractor and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork, and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests, and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless-steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by the FSEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch (4 micro switches furnished and installed by the FSEC) to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Electric Gas shut-off valve to be furnished by the FSEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. Gas shut off valve installation to be visible and accessible
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # P134.3 MANUAL FIRE PULL STATION
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Manual Fire Pull Station
2. Included in Fire Suppression System item #P134.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # P134.4 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Included with Fire Suppression System item #P134.2.
3. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
4. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube, and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
5. G.C. to provide blocking in wall.

ITEM # P134.5 S/S WALL FLASHING, HOOD
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Hood
2. Wall Panels are supplied as part of the hood package, item #P134.

ITEM # P135 EQUIPMENT STAND, REFRIGERATED BASE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: CBR36HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CBR36HC Chef Base Refrigerator, one-section, 36"W, self-contained, 5.64 cu. ft. capacity, (2) drawers (upper drawer accommodates (2) 12" x 20" x 6" pans per drawer & lower drawer accommodates (2) 12" x 20" x 6" pans per drawer - not included), full electronic control, stainless steel exterior (galvanized back & bottom), aluminum interior, magnetic gaskets with 2 year warranty, side mounted self-contained refrigeration system, R290 hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 1.7 amps, cord with NEMA 5-15P
6. One (1) Marine edge, standard
7. One (1) Drawer locks on all drawers, per unit
8. One (1) 6" Casters, in lieu of standard 3" casters
9. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack

ITEM # P136 GAS COUNTERTOP GRIDDLE
Quantity: One (1)
Manufacturer: Vulcan
Model: MSA36-C0100P

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model MSA36-C0100P Heavy Duty Griddle, countertop, gas, 36" W x 24" D cooking surface, 18mm (3/4") Rapid Recovery™ griddle plate (aluminum core & 304 series stainless steel surface), embedded mechanical snap action thermostat every 12", millivolt pilot safety, piezo ignition, low profile, stainless steel front, sides, front grease trough, 4" back & tapered side splashes, 4" adjustable legs, 81,000 BTU, CSA Star, CSA Flame, NSF
2. One (1) 1-year limited parts & labor warranty, standard
3. One (1) Natural gas
4. One (1) Model PLTRAIL-36 Plate Rail, 36" wide x 10-5/8" deep, stainless steel
5. One (1) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
6. Refer to MEP-501 - Gas Quick Disconnect Detail.
7. FSEC to verify gas type.

ITEM # P137 FULL POT FRYER
Quantity: One (1)
Manufacturer: Frymaster
Model: MJ150

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model MJ150 Performance Fryer, gas, floor model, 50 lb. oil capacity, open frypot design, millivolt controller, centerline fast-action temperature probe, EZSpark™ ignitor, thermostat knob behind front panel, over-the-flue basket hangers, includes: rack-type basket support, covers & (2) twin baskets, flue deflector, stainless steel frypot, door & cabinet, 122,000 BTU, NSF, CSA Flame, cCSAus, CSA Star
2. One (1) Natural gas
3. One (1) Millivolt Controller, standard
4. One (1) Spreader cabinet, stainless steel door and cabinet, free standing, with legs standard
5. One (1) Solid Flat Top, standard
6. One (1) Legs & casters (full set of each), standard
7. One (1) Model 8239414 Frypot Cover, full pot, 14-5/8 x 19-3/8" D, stainless steel (H55, MJ50, MJ40, GF40, GF14 - for models with basket lifts)
8. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
9. One (1) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
10. Refer to MEP-501 - Gas Quick Disconnect Detail.
11. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
12. FSEC to verify gas type.

ITEM # P137.1 FRYER SPREADER CABINET
Quantity: One (1)
Manufacturer: Frymaster
Model: SPREADER CABINET FOR MJ150

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SPREADER CABINET FOR MJ150 Fryer Spreader Cabinet
2. Included with item #P137, Fryer.

ITEM # P138 SPARE NO.

ITEM # P139 SPARE NO.

ITEM # P140 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Four (4) Model MQ1848G MetroMax® Q™ Shelf, 48"W x 18"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # P141 REACH-IN FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: FS-2D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FS-2D-S1-HC UltraSpec™ Series Freezer, Reach-in, two-section, self-contained refrigeration, 44.57 cu. ft. capacity, (2) full height solid hinged doors, (6) silver freeze (chrome-style) shelves, stainless exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, R290 Hydrocarbon refrigerant, 3/4 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 10.5 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. Thirty-Six (36) Type "A" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" pans
8. One (1) 6" Casters, in lieu of standard 6" stainless steel legs

ITEM # P142 S/S SURROUND, PASS-THRU WINDOW
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Surround, Pass-Thru Window
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.

ITEM # P143 MOP SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: F1916

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model F1916 Mop Sink, floor mount, 24-5/8"L x 21-1/2" W x 15-1/2"H overall, 20" wide x 16" front-to-back x 8" deep bowl, 16-gauge top with "V" edge, full skirt, 2" NPS drain with stainless steel removable strainer plate, 304 stainless steel construction, NSF

ITEM # P143.1 WALL / SPLASH MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-2465

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-2465 Service Sink Mixing Faucet, splash-mounted, 8" adjustable centers, 4" wrist action handles with color coded indexes, Cerama cartridges with check valves, spout has male garden hose outlet, 1/2" NPT vacuum breaker, upper wall brace, 48" black rubber flex hose, 1/2" NPT female inlets, ADA Compliant
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male

ITEM # P144 MOP BROOM HOLDER
Quantity: One (1)
Manufacturer: Eagle Group
Model: US0824-16/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model US0824-16/3 Utility Shelf with Mop Hanger, 24"W x 8"D, includes mop hangers & hooks for clothes, 16/304 stainless steel construction
2. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approximately 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P145 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Four (4) Model MQ1836G MetroMax® Q™ Shelf, 36"W x 18"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # P146 S/S WALL FLASHING, JANITOR'S CLOSET
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Janitor's Closet
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # P147 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T2424SEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T2424SEM-BS Spec-Master® Marine Series Worktable, 24"W x 24"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (4) stainless steel legs & adjustable bullet feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end
3. Where top abuts any walls, provide side splash.

ITEM # P300 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 34600.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 34600.0000 34600.0000 DUAL TF DBC® BrewWISE® ThermoFresh® Coffee Brewer, 18.9 gal/hr., coffee extraction controlled with pre-infusion & pulse brew, digital temperature control, large spray head, automatic programming, stores individual recipes, SplashGard® & optional funnel locks, wireless brewer-grinder interface, stainless steel finish, lower hot water faucet, wireless brewer-grinder interface, holds (2) 1-1/2 gallon ThermoFresh servers (servers sold separately), 120/240v/60/1-ph, 6600w, 27.5amps, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # P300.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: Two (2)
Manufacturer: BUNN
Model: 42750.0000

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # P301 EXHAUST FAN FOR ITEM #P134, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #P134
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # P302 MAKE-UP FAN, HEATED, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Make-Up Fan, Heated
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.

ITEM # P303 BAG & BOX SYSTEM, By Vendor
Quantity: One (1)
Manufacturer: By Vendor
Model: BY VENDOR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Bag & Box System
2. Refer to Item #E301, Soda Gun, for installation notes.
3. Electrical Contractor to provide standard 20-amp receptacle at location.
4. Refer to Beverage Conduit Installation Detail MEP-401 on Typical Installation Detail Sheet.

ITEM # P500 TRASH CAN, 32-GAL W/ DOLLY, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # P501 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P502 GLASS RACK, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # P503 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # P504 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # P505 POS PRINTER, SMALLWARES
Quantity: One (1)
Manufacturer: Epson
Model: TM-U220

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TM-U220 POS Printer
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # P506 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # P600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: Seven (7)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. Seven (7) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # P700-P707 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 - Item #P700 – Floor Sink
 - Item #P701 – Area Floor Drain
 - Item #P702 – Floor Sink
 - Item #P703 – Area Floor Drain
 - Item #P704 – Spare No.
 - Item #P705 – Floor Sink
 - Item #P706 – Area Floor Drain
 - Item #P707 – Funnel Floor Drain
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

IL – CAFÉ

ITEM # E100 WINE CELLAR CABINET
Quantity: One (1)
Manufacturer: True Mfg. – Residential
Model: TWC-24DZ-L-SG-B

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TWC-24DZ-L-SG-B Undercounter wine cabinet, one-section dual zone, 24"W, self-contained refrigeration, low-E double pane UV tinted glass door, barrel lock, TruLumina LED interior lighting, stainless steel interior and exterior, R134A Refrigerant, 115v/60/1-ph, 1.9 amps, NEMA 5-15P, cULus, Made in USA
2. One (1) 5-year compressor warranty, 3-year parts and labor warranty, standard
3. One (1) Stainless steel, standard
4. One (1) Model H04-STAINLESS (STD) Stainless Steel Standard Hardware handles, hinges, and logo
5. One (1) Side and Back finish: Galvanized steel, standard
6. One (1) Door Type: Glass with Stainless Steel Frame, standard
7. One (1) Door hinge location: Left, standard
8. One (1) Stainless Steel interior, standard
9. One (1) Shelving style: (5) glide out wine shelves & (1) floor cradle, standard
10. One (1) 14 color TruLumina, standard
11. One (1) Leg levelers, standard

ITEM # E101 BACK BAR CABINET, REFRIGERATED
Quantity: One (1)
Manufacturer: True Mfg. – Premier Bar
Model: TBR84-RISZ1-L-S-GGG-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TBR84-RISZ1-L-S-GGG-1 Refrigerated Back Bar Cooler, three-section, 84"W, (164) 6-pack cans or (96) 6-pack bottles capacity, side mounted self-contained refrigeration, (3) hinged glass doors (locking), (9) PVC coated adjustable wire shelves, LED interior lighting, stainless steel countertop, stainless steel exterior, stainless steel interior (sides & floor), leg levelers, R290 Hydrocarbon refrigerant, cULus, UL EPH Classified, Made in USA
2. One (1) 115v/60/1-ph, NEMA 5-15P
3. One (1) 7-year compressor warranty, 3-year parts and labor warranty, standard
4. One (1) Self-contained refrigeration, standard
5. One (1) Standard refrigerator (33°F-38°F/2°C)
6. One (1) Leg levelers, standard (34-15/16" overall cabinet height)
7. One (1) Krowne No legs or casters
8. Unit is provided standard with locks.
9. Unit is to be installed on curb, Item #E121
10. FSEC to verify Black or Stainless Finish before placing order.
11. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E101.1 DRAFT BEER DISPENSING KIT
Quantity: One (1)
Manufacturer: Perlick Corporation
Model: 69526-4TTTF-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 69526-4TTTF-R Tee Tower Style Beer Dispensing Kit - (4) Faucets, Tarnish Free Brass (dispensing head, drainer, faucet(s), air distributors, beer line connectors, air hose, air distributor cover, beer & drain line covers, air scoop & tubing, air sleeve, spanner wrench, drainer tubing - 8', silicone, hardware & fittings) (NOTE: keg couplers sold separately), field installation kit
2. One (1) Note: Keg coupler not included in beer dispensing kits; must be ordered separately. Refer to the Perlick tapping price book or perlick.com
3. Four (4) Model 36000GS "D" System Keg Coupler, probe, less lock, stainless steel

ITEM # E102 SPARE NO.

ITEM # E103 SPARE NO.

ITEM # E104 BOTTLE STORAGE UNIT
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-12RD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-12RD Royal Series Underbar Liquor Bottle Display Unit, freestanding, 12"W x 24"D (to match speedrail depth), holds (12) liquor bottles, (4) bottle steps with guard rails, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Locking cover for Royal Series underbar liquor bottle display unit (cannot be added with 4" backsplash)
4. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E105 MODULAR BAR DIE SYSTEM (18 FT.)
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KMB

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KMB Krowne Royal Modular Bar Die, built-in chaseways & removable panels
2. Eighteen (18) Model KMB Krowne Royal Modular Bar Die, built-in chaseways & removable panels, all pricing & layouts done by factory or sales representative (priced per foot)
3. One (1) Model KMB-EC Electrical box only
4. Five (5) Model KMB-LK-W Light Kit, snap-in LED light, cool white, kit includes: (1) snap-in LED light, (1) stainless steel pre-punched wall plate, (1) 2" x 4" electrical box
5. One (1) Model KMB-PS-25 Power Supply, for KMB-LK light kits, 25 watts, powers up to (10) lights
6. One (1) Model KMB-LD Dimmer Control, for LED light kit
7. Eighteen (18) Model KMB-MT Full size footprint template printed on mylar paper (priced per foot)
8. Three (3) Model KMB-PC Customer Side Panel Clips, millwork panel clips, 3/4" offset (24 pieces)
9. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.
10. Mylar template to be ordered prior to equipment going into production and is used to locate precise footprint of modular bar equipment. Template is to be included in pricing of equipment and is sent in sections labeled A thru Z for ease of layout. Template allows for accurate marking of floor drain locations and bee/vent lines along with the added benefit of spatially visualizing your future bar. Mylar sections can be sent in up to 200" in length.

ITEM # E106 SPARE NO.

ITEM # E107 HAND SINK
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-12ST

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-12ST Royal Series Underbar Hand Sink Unit, free standing, 12"W x 24"D x 36-1/2"H.O.A. (to match speedrail depth), 10"W x 12"D front-to-back x 7" deep sink bowl, splash mount Royal Series faucet, built-in soap & towel dispenser, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model 21-443L Krowne Royal Series E-Z Install Water Line Kit, wall mount, 22" long
4. One (1) Model KR-CB12 12" Add-On Cabinet Base with Door
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E108 SPARE NO.

ITEM # E109 ICE BIN
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR19-30-10

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR19-30-10 Royal Series Underbar Ice Bin/Cocktail Unit, built-in 10-circuit cold plate, 30"W x 19"D O.A., 92-lbs ice capacity, 12" deep stainless steel bin liner, 3/4" x 3-1/2" Soda Line cut out in backsplash, 1/2" drain, includes bottle wells, stainless steel top, front & sides, galvanized steel back & bottom, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model SC30F Underbar Ice Bin Cover, full, for 30"W ice bin without bottle wells, stainless steel, NSF
4. One (1) Model KR-406 Royal faucet installed over ice bin; low lead compliant
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E109.1 SPEED RAIL / RACK
Quantity: One (1)
Manufacturer: Krowne Metal
Model: RS-36

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RS-36 Royal Series Single Speed Rail, built-in, 36"W x 5"D, sound deadened bottom, stainless steel construction, NSF
2. One (1) Model KR-SC36 Royal Series Speed Rail Locking Cover, single, 36"W, stainless steel construction
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E110 ICE BIN
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR19-6

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR19-6 Royal Series Underbar Bottle Storage/Ice Bin, insulated, 6"W x 19"D, holds (3) bottles, 20 lbs. ice capacity, 10" deep stainless steel bin liner, 1" drain, stainless steel top, front, & sides, galvanized steel back & bottom, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E111 UNDERBAR SODA GUN HOLDER
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-6SH

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-6SH Royal Series Underbar Soda Gun Holder, 6"W x 24"D, fits all Wunder-Bar® & Schroeder® soda guns & manifolds, removable cover, includes drip cup, stainless steel top, front, & sides, NSF (soda gun not included) (Locking Covers cannot run in front of this unit)
2. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E112 GLASS RACK
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-GSB1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-GSB1 Royal Series Underbar Glass Rack Storage Unit, drainboard top, 24"W x 24"D, open front cabinet base with rack slides for (3) 20" x 20" glass racks, embossed top includes 1" drain, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E113 UNDERBAR SINK UNITS
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR19-64C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR19-64C Royal Series Underbar Sink Unit, four compartment, 72"W x 19"D, 10" wide x 14" front-to-back x 10" deep compartments, 12" embossed drainboards on left & right, splash mount Royal Series faucet with double jointed spout, apron on front & sides, (4) removable overflow standpipes, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. Two (2) Model 21-443L Krowne Royal Series E-Z Install Water Line Kit, wall mount, 22" long
4. One (1) Model CUSTOM 2ND FAUCET INSTALLED ON UNIT
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E113.1 SPEED RAIL / RACK
Quantity: Two (2)
Manufacturer: Krowne Metal
Model: RS-36

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model RS-36 Royal Series Single Speed Rail, built-in, 36"W x 5"D, sound deadened bottom, stainless steel construction, NSF
2. Two (2) Model KR-SC36 Royal Series Speed Rail Locking Cover, single, 36"W, stainless steel construction
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E114 UNDERBAR TRASH STATION
Quantity: Two (2)
Manufacturer: Krowne Metal
Model: KR24-T12

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model KR24-T12 Royal Series Underbar Trash Station, 12"W x 24"D (to match speedrail), opening in top for trash disposal, fits slim jim (up to 30" high), lift-up front door, stainless steel front & sides, no legs, NSF (TRASH RECEPTACLE NOT INCLUDED)
2. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E115 BLENDER STATION
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-12BD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-12BD Royal Series Underbar Blender Station, with dump sink, 12"W x 24"D x 36-1/2"H O.A. (to match speedrail depth), 7" deep sink bowl, splash mount Royal Series faucet, 9"D recessed blender shelf with utility box mounted underneath (GFCI receptacle required), stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model 30-152 Perforated Drain Basket for Bar Sink, fits all 10" x 14" x 10" sink bowls, 5" deep, with stainless steel handles, stainless steel
4. One (1) Model 21-443L Krowne Royal Series E-Z Install Water Line Kit, wall mount, 22" long
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E116 UNDERBAR SINK UNITS
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-MD8

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-MD8 Royal Series Underbar Speed Station, 8"W x 24"D O.A., dipper well, tool well with dipper well faucet, high performance push-down glass rinser faucet with pressure regulator, 1" center drain, stainless steel top, front, & sides, NSF
2. One (1) This unit is built to order and cannot be returned
3. One (1) 6-1/2" High Backsplash, standard
4. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E117 WINE REFRIGERATOR
Quantity: One (1)
Manufacturer: True Manufacturing Co., Inc.
Model: GDM-23W-HC~TSL01

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GDM-23W-HC~TSL01 Wine Merchandiser, one-section, True standard look version 01, (4) wine racks & (1) shelf, powder coated steel exterior, (1) Low-E thermal glass hinged door with lock, LED interior lighting, black aluminum interior with mirrored back, stainless steel floor, R290 Hydrocarbon refrigerant, 1/3 HP, 115v/60/1-ph, 5.4 amps, NEMA 5-15P, cULus, Made in USA, ENERGY STAR®
2. One (1) NOTE: Not commonly stocked; contact factory for leadtime
3. One (1) Self-contained refrigeration standard
4. One (1) Warranty - 3-year parts and labor
5. One (1) Warranty - 7-year compressor; self-contained only
6. One (1) Left door hinging
7. One (1) Exterior: Stainless steel, for 1 section units
8. One (1) Model S-PS Sign, Plain Stainless Steel in lieu of standard
9. One (1) Model 830280 Castors, 2-1/2", set of 4
10. Unit is provided standard with locks.
11. FSEC to verify Black or Stainless Finish before placing order.

ITEM # E118 WINE REFRIGERATOR
Quantity: One (1)
Manufacturer: True Manufacturing Co., Inc.
Model: GDM-23W-HC~TSL01

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GDM-23W-HC~TSL01 Wine Merchandiser, one-section, True standard look version 01, (4) wine racks & (1) shelf, powder coated steel exterior, (1) Low-E thermal glass hinged door with lock, LED interior lighting, black aluminum interior with mirrored back, stainless steel floor, R290 Hydrocarbon refrigerant, 1/3 HP, 115v/60/1-ph, 5.4 amps, NEMA 5-15P, cULus, Made in USA, ENERGY STAR®
2. One (1) NOTE: Not commonly stocked; contact factory for leadtime
3. One (1) Self-contained refrigeration standard
4. One (1) Warranty - 3-year parts and labor
5. One (1) Warranty - 7-year compressor; self-contained only
6. One (1) Door hinged right standard
7. One (1) Exterior: Stainless steel, for 1 section units
8. One (1) Model S-PS Sign, Plain Stainless Steel in lieu of standard
9. One (1) Model 830280 Castors, 2-1/2", set of 4
10. Unit is provided standard with locks.
11. FSEC to verify Black or Stainless Finish before placing order.

ITEM # E119 BLENDER, BAR
Quantity: One (1)
Manufacturer: Hamilton Beach
Model: HBB250R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HBB250R Rio® Bar Blender, two speed motor, 44 oz. stackable polycarbonate container, hi/low & pulse switches, Wave-Action® System, stainless steel blades, 3/4 HP, 120v/60/1-ph, cULus, NSF listed, 2-year warranty
2. One (1) Model 6126-250 Rio® Blender Container, 44 oz., polycarbonate
3. One (1) Model 98250 Rio® Blender Repair Kit, includes: cutting assembly, clutch, retainer nut & gasket

ITEM # E120 DRAINBOARD
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-GS12

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-GS12 Royal Series Underbar Drainboard, free standing, 12"W x 24"D, embossed top with 1" drain, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # E121 S/S CURB
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Curb
2. Custom S/S Curb size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. Refer to detail #FAB-30.

ITEM # E300 ESPRESSO MACHINE, By Vendor
Quantity: One (1)
Manufacturer: verismo
Model: 701

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 701 Espresso Machine
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # E301 SODA GUN SYSTEM, 8-14 BUTTON, By Vendor
Quantity: One (1)
Manufacturer: By Vendor
Model: BY VENDOR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Soda Gun System, 8-14 Button
2. FSEC to verify routing and destination with vendor and all applicable trades and coordinate.
3. Soda Vendor to provide a complete and operational soda delivery system that will adequately handle the soda dispensers as indicated in this specification section.
4. Soda Vendor to provide and install all lines, pumps, gauges, dispensing units, carbonators, racks, product, and miscellaneous parts. Coordinate with Food Service Director on site.
5. Soda Vendor to verify location and type of carbonators prior to installation.
6. GC to provide and install 6" PVC conduit for the soda lines. Location to be verified with the design team.
7. Placement of the soda line conduits are critical. Every effort shall be made to locate penetrations, so they are concealed but accessible. All applicable contractors are to coordinate conduit locations with the project manager on site.
8. Millwork fabricator to provide soda line chase and counter cut-outs in beverage counter if required. Millwork fabricator to coordinate with soda Vendor.
9. FSEC to coordinate all specifications and installation of systems in advance of close-in and fabrication with the project manager, equipment fabricators, GC, and food service consultant.

ITEM # E400-E406 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:

Item E400 – Back Counter
Item E400.1 – Wall Cabinets
Item E400.2 – Lights, LED
Item E401 – Front Bar
Item E401.1 – Lights, LED
Item E402 – Spare No.
Item E403 – Merchandise Counter
Item E404 – Back Counter
Item E404.1 – Lights, LED
Item E404.2 – Lights, LED
Item E405 – Merchandise Counter
Item E406 – Dutch Door

B. **MANUFACTURER:**

Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com

C. **SUBSTITUTIONS:**

Substitutions: no substitutions/alternate manufacturers shall be accepted.

D. CERTIFICATION:

AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.

UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.

NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.

E. GENERAL CONDITIONS:

Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.

F. RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDED BY OTHER TRADES:

1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl, or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated, and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
(1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** Stained Wood Finish or P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.

8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs, and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides.

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED:** FINISHED - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR:** APPLIED PANEL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR:** FINISHED - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE:** TOP STRETCHERS or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL TOP - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE:** FULL BOTTOM with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL BOTTOM with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS:** FULL BACK - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moister barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer front selections.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **FLAT WOODEN:** Custom Design to be determined by client.
5. **PANELED WOOD:** Custom Design to be determined by client.
6. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.
7. **FRAME-ONLY GLASS:** Shall be 3/4 " thick frame, laminated both sides with HPL or be stained/painted veneer. Glass shall be clear acrylic and shall be retained in openings with removable glazing. Doors shall be available for both sliding and hinged designs. Custom Design to be determined by client.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **GATE HINGES – DUTCH DOOR:** DOUBLE ACTING - BOMMER 7114-603 Adjustable Spring tension hinge SINGLE ACTING – McKinney MacPro MPS60 Adjustable Spring tension hinge. Hinges to be installed at top and bottom of the door.
3. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
4. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
5. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All looks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.

6. **LOCKS – DUTCH DOORS:** Provide Progressive Hardware Model #R1000 Bolt Lock. Mount sideways on operator side. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin. Refer to typical detail MWK-115.
7. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
8. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
9. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
10. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
11. **LED LIGHTS - WALL CABINETS:** All wall cabinets to be provided with SuperBrightLEDs Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft., housed in a L-TASK-12F LED Aluminum Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of cabinets. Installed below wall cabinet with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured inside a wall cabinet to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall below wall cabinets. Millwork fabricator to provide LED lights and install in wall cabinets complete with all interconnections.

12. **LED LIGHTS - MERCHANDISE SHELVING:** All merchandise shelves to be provided with SuperBrightLEDs Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft., housed in a L-TASK-7D LED Aluminum Corner Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of shelving. Installed below each shelf in front end corner of shelf with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured to side of a shelf to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall location determined by electrical engineer. Millwork fabricator to provide LED lights and install in merchandise shelving complete with all interconnections.
 13. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 ½" unless required by site conditions.
 14. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors, or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
 15. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
 16. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
 17. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film, or vinyl covering); Refer to architectural/interior design documents for finish selections and locations.
 18. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 19. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 20. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 21. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
- K. EQUIPMENT INTEGRATION & PROTECTION:**
1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
 2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.

3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
 4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
 5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
 6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
 7. **AIR FLOW & VENTALATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.
- L. **COORDINATION:**
1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
 2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
 3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.
- M. **SUBMITTALS:**
1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
 2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
 3. Include MEP sheet if a part of the Scope.
 4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
 5. Submit samples of exposed material colors and hardware as requested by the architect/owner.
- N. **JOB CONDITIONS**
1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
 2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
 3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.

4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent, or excessive changes in temperature or humidity level over the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location, and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing, and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or FLOORS in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
13. Walls and Partitions (whether framed, demountable or masonry) must be in place.
14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
17. Elevator, hoist, or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.

O. INSTALLATION, QUALITY ASSURANCE AND WARRANTY:

1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
3. Install and trim millwork to walls, floors, ceiling, and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking, or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care, and maintenance of custom millwork.
7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # E500 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # E501 SPARE NO.

ITEM # E502 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: Two (2)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # E503 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # E504 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # E505 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # E600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: One (1)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # E700-E703 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 Item #E700 – Area Floor Drain
 Item #E701 – Floor Sink
 Item #E702 – Floor Sink
 Item #E703 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

IL – GAME/CLASSROOMS

ITEM # G300 RESIDENTIAL UNDERCOUNTER REFRIGERATOR, By Owner
Quantity: One (1)
Manufacturer: By Owner
Model: BY OWNER

1. One (1) Model BY OWNER Residential Undercounter Refrigerator
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. GC shall furnish and install this item, through his supplier.
4. GC is responsible for verifying manufacturer, model number, size, and components with Architect/Interior Designer BEFORE PLACING ORDER FOR THIS ITEM.
5. GC shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and millwork counters.
6. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
7. FSEC Millwork contractor to provide trim kits for residential equipment in order to conceal any gaps creating a complete built-in look.

ITEM # G301 RESIDENTIAL UNDERCOUNTER REFRIGERATOR, By Owner
Quantity: One (1)
Manufacturer: By Owner
Model: BY OWNER

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY OWNER Residential Undercounter Refrigerator
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. GC shall furnish and install this item, through his supplier.
4. GC is responsible for verifying manufacturer, model number, size, and components with Architect/Interior Designer BEFORE PLACING ORDER FOR THIS ITEM.
5. GC shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and millwork counters.
6. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
7. FSEC Millwork contractor to provide trim kits for residential equipment in order to conceal any gaps creating a complete built-in look.

ITEM # G500	ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity:	One (1)
Manufacturer:	PRO Marketplace
Model:	CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

IL – COFFEE SHOP

ITEM # C100 UNDERCOUNTER REFRIGERATOR, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR27HC-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR27HC-R Undercounter Refrigerator, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/10 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
5. One (1) Door hinging: on left at factory
6. One (1) Model 00C30-099A Door Lock
7. Unit to operate with R404a refrigerant connected to remote rack system item #C124
8. Remove castors and legs - unit to sit on a millwork base.
9. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
10. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

ITEM # C101 HAND SINK, UNDERMOUNT
Quantity: One (1)
Manufacturer: Eagle Group
Model: SR10-14-5-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SR10-14-5-1 Self-Rimming Undermount Sink, one compartment, 10" wide x 14" front-to-back x 5" deep bowl, 4" OC deck mount faucet with gooseneck spout (302004), includes basket drain, 20/304 stainless steel construction, NSF
2. One (1) Model E44 Punching extra faucet holes or changing location of faucet holes from standard
3. One (1) Model 362188 Bottom-Mount Kit, (8) undermount clips per kit
4. Omit standard faucet, provide T&S Brass item #C101.1
5. Mount and seal sink to underside of stone utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps.

ITEM # C101.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3100-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # C101.2 TOWEL/SOAP DISPENSER, RECESSED
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 1471

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1471 Towel/Soap Dispenser, Recessed
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's standard facility paper towel size/fold.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # C102 ICE MAKER WITH BIN, CUBE-STYLE
Quantity: One (1)
Manufacturer: Scotsman
Model: CU0415MA-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CU0415MA-1 Undercounter Ice Maker With Bin, cube style, air cooled, 15" width, self-contained condenser, production capacity up to 58 lb./24 hours at 70°/50° (38 lb. certified at 90°/70°), 36 lb. bin storage capacity, clear medium cube, horizontal evaporator, ADA compliant with floor mount kit, no side clearance required, unit specific QR code, 6" legs included, ice scoop included, R-134a refrigerant, includes power cord with NEMA 5-15P plug, 115V/60/1-ph, 3.6 amps, cETLus, ETL-Sanitation, CE, engineered and assembled in USA
2. One (1) 3-year parts & labor warranties
3. One (1) Model KUFM15 Undercounter Floor Mount Kit, fits under ADA 34" countertops by reducing height to 31.9"
4. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.

ITEM # C102.1 FLOOR MOUNT KIT
Quantity: One (1)
Manufacturer: Scotsman
Model: KUFM15

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KUFM15 Undercounter Floor Mount Kit, fits under ADA 34" countertops by reducing height to 31.9"
2. Included with Item #C103, Ice Machine with Bin.

ITEM # C102.2 WATER FILTER SYSTEM, ICE MACHINE
Quantity: One (1)
Manufacturer: Everpure
Model: EV932401

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV932401 Insurice® Single-i2000² System, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron filtration, for cubers up to 500 lbs./day or flakers up to 1,500 lbs./day, pressure gauge, flushing valve, NSF, ANSI
2. One (1) Model EV961222 Everpure® i2000² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, chlorine taste & odor reduction, scale inhibitor, cyst reduction 35-100° F temperature, 10-125 PSI non-shock required, ANSI, NSF
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # C103 DISPLAY CASE, REFRIGERATED, REMOTE
Quantity: One (1)
Manufacturer: Structural Concepts
Model: NR4847RSV

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model NR4847RSV Reveal® Service Refrigerated Case, freestanding, 47-3/4"W, 47-1/8"H, Breeze-E (Type II) with EnergyWise self-contained refrigeration, (2) removable & adjustable clear glass shelving, LED top & shelf lights, vertical, fixed front & side UV frameless glass, full end panel, clear glass rear sliding doors, blue fin coated coil, condensate pan, black exterior & interior, cETLus, ETL-Sanitation
2. One (1) If GFCI is required, a GFCI breaker MUST be used in lieu of a GFCI receptacle
3. One (1) 1 yr. parts & labor warranty, 5 yr. compressor warranty, standard
4. One (1) Remote refrigeration with expansion valve, solenoid valve & thermostat (does not include condensing unit), requires floor drain-rear access
5. One (1) Electrical leads, standard with remote
6. One (1) Shims, standard with remote
7. One (1) Interior: Stainless steel
8. One (1) Exterior: Stainless steel
9. One (1) Panel exterior: Wilsonart® or Formica® premium laminates - as noted in laminate chart
10. One (1) Left end panel: Full end panel
11. One (1) Right end panel: Full end panel
12. One (1) Lower front panel: Stainless steel
13. One (1) Rear door: Reflective Glass rear sliding doors
14. One (1) Rear door lock
15. One (1) Lower rear panel: Black, standard
16. One (1) Lights: LED 3500K with frost lens, standard
17. Color selection as per architectural finish schedule (Wilsonart or Formica Premium)
18. Provide shop drawings for review and approval
19. Finish: PLAM - Wilsonart, Ebony Recon 7997-38
20. Unit to operate with R404a refrigerant connected to remote rack system item #C124

ITEM # C104 ESPRESSO CAPPUCCINO MACHINE
Quantity: One (1)
Manufacturer: Rancilio Group North America
Model: EGRO ONE-TOP MILK XP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EGRO ONE-TOP MILK XP Egro ONE Top Milk XP, staff/self-service, super-automatic, 5.7" color touchscreen user interface, for up to 48 drink selections, (2) automatic foamer heads, includes milks pumps (for one type of milk), up to 250 milk drinks per hour, two-piece drink outlet, (2) grinders & hoppers, one-step cleaning, centralized hot water, Americano bypass single cup, USB port, ABS & stainless-steel construction, CE, cETLus, ETL-Sanitation
2. One (1) 2-year parts, 1 year labor warranty, 1 preventative maintenance visit
3. One (1) Installation
4. One (1) 220v/60/1-ph, 30 amp, 6700 watts, NEMA L6-30P, standard
5. One (1) Model MILK COFFEE CLEANING TABLETS (1) Egro Coffee Cleaning Tablets, (100) tabs per bottle & (2) Egro Milk Coffee Cleaning Tablets, (50) tabs per bottle
6. One (1) iSteam automatic steam wand
7. One (1) Top Milk Fridge (KS9), 6.5-liter (1.7 gallon) capacity countertop fridge fits on the left side of the machine
8. One (1) 110v/60/1-ph, 200 watts, 15.0 amps, NEMA 5-15P
9. One (1) Multi-Milk, enables the machine to deliver two different types of milk
10. One (1) Multi-drink software touchscreen
11. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
12. Plumbing Contractor to make all connection, from water source, to filter and unit and extend drain to floor sink.

ITEM # C104.1 WATER FILTER SYSTEM, ESPRESSO
Quantity: One (1)
Manufacturer: Everpure
Model: EV929321

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV929321 Cold/Insurice Manifold, single, 20" prefilter head, for fountain, ice, coffee and tea machines, built-in water pressure gauge, includes mounting box bracket & screws, EC110 or EC210 pre-filter cartridge
2. One (1) Model EV969321 Everpure® 4FC5 Replacement Cartridge, 15,000-gallon capacity, 5-micron rating, 2.5 gpm flow rate, reduces chlorine, taste & odor, sediment, bacteria
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # C105 UNDERCOUNTER REFRIGERATOR, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR27HC-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR27HC-R Undercounter Refrigerator, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/10 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
5. One (1) Door hinging: on left at factory
6. One (1) Model 00C30-099A Door Lock
7. Unit to operate with R404a refrigerant connected to remote rack system item #C124
8. Remove castors and legs - unit to sit on a millwork base.
9. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
10. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

ITEM # C106 WATER FILTER SYSTEM, COFFEE
Quantity: One (1)
Manufacturer: Everpure
Model: EV929302

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV929302 Coldrink®/Insurice® Manifold, twin, 10" prefilter head, for fountain, ice, coffee and tea machines, built-in water pressure gauge, includes: mounting box bracket & screws, pre-filter cartridge, 3/4" NPT
2. Two (2) Model EV969321 Everpure® 4FC5 Replacement Cartridge, 15,000-gallon capacity, 5-micron rating, 2.5 gpm flow rate, reduces chlorine, taste & odor, sediment, bacteria (priced per cartridge)
3. One (1) Model EV953412 Everpure® EC110 Prefilter Cartridge, fits most 10" drop-in housings, 10-micron rating, sediment reduction (12 each per case)
4. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
5. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
6. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
8. Install filter as per elevations on food service drawings.
9. FSEC to provide a sticker and date of installation on filter cartridges.
10. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
11. For more information see filter installation detail MEP-101.

ITEM # C107 MOBILE BUSSING CART
Quantity: One (1)
Manufacturer: Kaliber Innovations
Model: BC-4036

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BC-4036 Mobile Bussing Cart
2. Dimensions: 37"W x 41.5"H x 24"D
3. Holds 6 bussing pans 21" x 15" x 7" (bussing pans not included)
4. Heavy-duty 5" concealed casters rated at 350 lbs.
5. Integrated pull handles on both sides.
6. Doors open 270 Degrees for easy access.
7. Durable stainless-steel frame.
8. Easy access for cleaning.
9. 12" Clearance between two bottom shelves.
10. Width of the unit with the doors folded down is 38.5".
11. Available in any P-LAM Style and Color; non-premium selection
12. Cart P-LAM finish selection to match adjacent millwork.
13. Finish: PLAM - Wilsonart, Ebony Recon 7997-38

ITEM # C108 RAPID COOK OVEN
Quantity: One (1)
Manufacturer: Merrychef USA
Model: E2S HIGH TREND

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E2S HIGH TREND eikon™ Microwave Convection/Impingement Oven, high power, ventless, 12" cooking cavity, EasyTouch™ controls, USB memory, bottom-hinged door, built-in catalytic converter, 'Trend' finish, includes: (1) cook plate "DB0719", (1) paddle "SR318", (1) solid bottom basket "32Z4080", (1) mesh bottom basket "32Z4081", (1) cool down pan "32Z4079", (2) sheet pan liners "32Z4088" & (1) cleaner kit "32Z4148", stainless steel construction, 208/240v/60/1-ph, 30 amps, NEMA 6-30P, NSF, UL EPH Classified, cULus
2. One (1) 1-year parts & labor warranty, standard
3. One (1) Black exterior finish
4. One (1) Model 31Z1335 Menu Key, USB
5. One (1) Model SR318 Guarded Paddle, 16.8" x 11.8" x 2.7", with supporting side walls & handle
6. One (1) Model DB0739 Flat/Flat e2s Cook Plate, 12" x 12.1" x 0.24"
7. One (1) Model 32Z4088 Solid Cook Plate Liners, 11.2" x 11.2" x .006", natural, teflon
8. One (1) Model 32Z4096 Non-Stick Cook Plate Liner, green, designed to increase the non-stick capability of the cooking surface
9. One (1) Model 32Z4080 Teflon Tray, 11" x 11" x .5", solid base, black
10. One (1) Model 32Z4090 Teflon Tray, 11" x 5.5" x .5", solid base, black
11. One (1) Model 32Z4081 Teflon Basket, perforated base, 11" x 11" x .5", black
12. One (1) Model 32Z4123 Teflon Basket, solid bottom, 5.5" x 5.5" x 0.5", red
13. One (1) Model 32Z4144 Oven cleaner, (1) case, includes (6) spray bottles oven cleaner
14. One (1) Model 32Z4145 Oven protector, (1) case, includes (6) spray bottles oven protector
15. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
16. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software, when it is made available.

ITEM # C109 MOBILE HEATED CABINET
Quantity: One (1)
Manufacturer: Metro
Model: C563L-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model C563L-SFS-UA C5™ 6 Series Heated Holding Cabinet, mobile, undercounter, insulated, solid door, top mount controls & analog thermometer, ducted heating system, thermostat 70° to 200°F temp, universal wire slides (5) 18" x 26" or (10) 12" x 20" x 2-1/2" pan capacity, 1-1/2" adjustable wire slides, 3" casters, 304 stainless steel, 120v/60/1-ph, 1440 watts, 12 amps, NEMA 5-15P, cULus, NSF
2. One (1) Right hand hinging, standard
3. One (1) Model C5-LATCHFLUSH C5 Flush Latch Handle
4. One (1) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series

ITEM # C110 SPARE NO.

ITEM # C111 PLATE AND DISH DISPENSER, DROP-IN
Quantity: One (1)
Manufacturer: Delfield
Model: DIS-1013-ET-MOD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DIS-1013-ET-MOD Dispenser, Even Temp Heated Dish, drop-in type, single self-elevating dish dispensing tube, maximum dish size approximately 10.12" diameter, steel frame, stainless steel tubes and exterior, cut-out diameter 12-7/8", flange diameter 13-1/2", 7.0 kW, cUL, UL, NSF
2. One (1) Model 0460000N 1-year parts & labor warranty, standard
3. One (1) 120v/60/1-ph, 5.5 amps, NEMA 5-15P, standard
4. One (1) Model DIS-SL Shorten dispenser tubes to special length
5. FSEC to VERIFY plate SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's selection of plates.
6. Unit shall plug into an easily accessible duplex receptacle.
7. FSEC shall verify that space available in counter and will accommodate unit, adjust height if necessary, for front counters.
8. FSEC to coordinate installation of dispenser with counter and all adjacent and associated equipment.

ITEM # C112 PREP SINK, UNDERMOUNT
Quantity: One (1)
Manufacturer: Eagle Group
Model: SR14-16-9.5-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SR14-16-9.5-1 Self-Rimming Drop-In Sink, one compartment, 14" wide x 16" front-to-back x 9-1/2" deep bowl, 4" OC deck mount faucet with gooseneck spout (302004), includes basket drain, 20/304 stainless steel construction, NSF
2. One (1) Model E44 Punching extra faucet holes or changing location of faucet holes from standard
3. One (1) Model 362188 Bottom-Mount Kit, (8) undermount clips per kit
4. Omit standard faucet, provide T&S Brass item #C112.1
5. Mount and seal sink to underside of stone utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps.

ITEM # C112.1 PANTRY FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # C113 MEGA TOP SANDWICH / SALAD PREPARATION REFRIGERATOR, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP36HC-15B-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP36HC-15B-R UltraSpec™ Series Big Top Sandwich Prep Table, one-section, 36"W, self-contained, 10.0 cubic feet capacity, (1) self-closing doors, (2) epoxy coated shelves, stainless top with opening for (15) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 2.2 amps, cord, NEMA 5-15P
5. One (1) Door hinging: on left at factory
6. One (1) Model 00C30-099A Door Lock
7. Unit to operate with R404a refrigerant connected to remote rack system item #C124
8. Remove castors and legs - unit to sit on a millwork base.
9. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
10. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

ITEM # C114 SPARE NO.

ITEM # C115 SPARE NO.

ITEM # C116 REFRIGERATED MERCHANDISER, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: LSR23HC-1-IQ-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LSR23HC-1-IQ-R UltraSpec™ Series Merchandiser Refrigerator, Reach-in, one-section, self-contained refrigeration, 23.1 cu. ft. capacity, (1) full height hinged glass door, (5) epoxy coated shelves, stainless steel exterior, aluminum interior, electronic lock, standard depth cabinet, electronic LED lighting, expansion valve technology, Magnetic door gasket with 2 year warranty, stainless steel breakers, bottom mounted compressor, 1/4 HP, cULus, UL EPH Classified, UL-Sanititation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 3.0 amps, cord with NEMA 5-15P
5. One (1) Door hinging: standard on right
6. One (1) Custom color cabinet (powder coated), in lieu of standard
7. One (1) Model RAL 9005 Jet Black
8. One (1) White interior, in lieu of standard
9. Unit to operate with R404a refrigerant connected to remote rack system item #C124
10. Remove castors and legs - unit to sit on a millwork base.
11. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
12. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.
14. Verify color selection with designer - Custom Colors will be additional upcharge

ITEM # C117 REFRIGERATED MERCHANDISER, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: LSR49HC-1-IQ-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LSR49HC-1-IQ-R UltraSpec™ Series Merchandiser Refrigerator, Reach-in, two-section, self-contained refrigeration, 46.15 cu. ft. capacity, (2) full height hinged glass doors, (5) epoxy coated shelves per door section, stainless steel exterior, aluminum interior, electronic lock, standard depth cabinet, electronic LED lighting, expansion valve technology, Magnetic door gasket with 2 year warranty, stainless steel breakers, bottom mounted compressor, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 5.4 amps, cord with NEMA 5-15P
5. One (1) Door hinging: left door hinged on left; right door hinged on right standard
6. One (1) Custom color cabinet (powder coated), in lieu of standard
7. One (1) Model RAL 9005 Jet Black
8. One (1) White interior, in lieu of standard
9. Unit to operate with R404a refrigerant connected to remote rack system item #C124
10. Remove castors and legs - unit to sit on a millwork base.
11. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
12. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.
13. Verify color selection with designer - Custom Colors will be additional upcharge

ITEM # C118 REFRIGERATED MERCHANDISER, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: LSR23HC-1-IQ-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LSR23HC-1-IQ-R UltraSpec™ Series Merchandiser Refrigerator, Reach-in, one-section, self-contained refrigeration, 23.1 cu. ft. capacity, (1) full height hinged glass door, (5) epoxy coated shelves, stainless steel exterior, aluminum interior, electronic lock, standard depth cabinet, electronic LED lighting, expansion valve technology, Magnetic door gasket with 2 year warranty, stainless steel breakers, bottom mounted compressor, 1/4 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 3.0 amps, cord with NEMA 5-15P
5. One (1) Door hinging: on left at factory
6. One (1) Custom color cabinet (powder coated), in lieu of standard
7. One (1) Model RAL 9005 Jet Black
8. One (1) White interior, in lieu of standard
9. Unit to operate with R404a refrigerant connected to remote rack system item #C124
10. Remove castors and legs - unit to sit on a millwork base.
11. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
12. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.
13. Verify color selection with designer - Custom Colors will be additional upcharge

ITEM # C119 INDUCTION RETHERMALIZER, BUILT-IN / DROP-IN
Quantity: Two (2)
Manufacturer: Vollrath
Model: 74701D

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 74701D Mirage® Induction Rethermalizer, drop-in, dry operation, 7 quart, inset with hinged cover, (4) soup presets, stir indicator LED, solid state controls with locking function, temperature control in °F or °C, cabinet mount controls with leads, includes: mounting hardware, cord with NEMA 5-15P, 800 watts, 6.7 amps, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. Two (2) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Six (6) Model 88184 Inset, 7-1/4-quart, induction ready, for Mirage induction rethermalizer, NSF (minimum order quantity of 6, broken case charge applied if less than 6)
4. Two (2) Model 4980422 Ergo Grip® Ladle, 4 oz., 3-1/8" bowl dia., 13-1/8"L OAL, equipped with all-natural antimicrobial, 3 oz., stainless steel, 13-1/8" OA length, Kool-Touch™ one-piece black construction offset handle, safe up to 225°F (107.2°C), fully functional to 350°F (176.6°C), integrated handle stopper, Jacob's Pride® Collection, Limited Lifetime Warranty, NSF
5. Two (2) Model 47493 Contemporary Inset Cover, hinged, fits 7 quart inset, easy on/off lid, welded handle, condensation returns to inset, no friction fit tabs for easy installation & removal, dishwasher safe, stainless steel construction, imported
6. Two (2) Model 47491 Decorative Ring, for 7 qt. induction soup drop-in units, 22-gauge stainless steel
7. FSEC to install soup well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
8. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
9. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
10. Equipment to be NSF and UL listed and labeled.
11. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge wire mesh framed insert in doors. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting

ITEM # C120 SPARE NO.

ITEM # C121 INDUCTION HOLD UNIT, BUILT-IN
Quantity: Two (2)
Manufacturer: Garland/US Range
Model: HOIN1500

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model HOIN1500 Induction Hold Unit, built-in, (1) 15.75" x 31.5" ceran ceramic glass top, RTCSmp temperature control, dual temperature zones, dual temperature display (set/current temp), ETL, cETLus, CE, FCC
2. Two (2) Two-year on-site parts and labor warranty, standard
3. Two (2) 120v/60/1-ph, 1.5 kW, 12.0 amps
4. **INSTALLATION:**
Units to be installed flush with 4" separation between glass. Do not use stainless trim around the perimeter for installation as this will interfere with induction performance.
Millwork Fabricator to provide support beams in between units; seal all crevices as required and follow practice outlined in national standard NSF 4. See installation detail MWK-116.
Controls to be recessed into millwork apron.
Digital Thermometer display on glass top to be oriented to operator side.
Installation to be performed by certified factory installers only - NO EXCEPTIONS
5. **STONE COMPATIBILITY:**
Units are compatible with ¾" or 1-1/4" thick standard engineered countertops – another specific countertop material can be used as recommended by manufacturer.
6. **VENTILATION:**
Each unit requires 70 CFM free air flow with adequate enclosure venting and maximum ambient temperature of 122°F. When installed in a closed cabinet, provide McNichols 16-gauge 1833531638 perforated metal mesh or equal on doors.
At location of induction generator, AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting.
Provide cabinet fan for ventilation and air movement.
7. **ELECTRICAL CONNECTIONS:**
All internal connections from generator to each induction plate to be interconnected by FSEC utilizing factory provided wiring harness. All wiring harness to be neatly bound and run as close as possible to top corner of cabinet with zip ties. No wiring should be hanging loose on cabinet floor.
Electrical Contractor to provide single point connection to the induction generator with means of disconnect if hard wired, connection to be with a switch.
8. **COORDINATION:**
FSEC is responsible for verifying that space available will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
FSEC is responsible for reviewing millwork shop drawings.

ITEM # C122 FREEZER MERCHANDISER, REMOTE
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: LSF23HC-1-IQ-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LSF23HC-1-IQ-R UltraSpec™ Series Merchandiser Freezer, Reach-in, one-section, self-contained refrigeration, 22.5 cu. ft. capacity, (1) full height hinged glass door, (5) epoxy coated shelves, stainless steel exterior, aluminum interior, electronic lock, standard depth cabinet, electronic LED lighting, expansion valve technology, Magnetic door gasket with 2 year warranty, stainless steel breakers, bottom mounted compressor, 3/4 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) REMOTE REFRIGERATION system by others
4. One (1) 115v/60/1-ph, 7.5 amps, cord with NEMA 5-15P
5. One (1) Door hinging: standard on right
6. One (1) Custom color cabinet (powder coated), in lieu of standard
7. One (1) Model RAL 9005 Jet Black
8. One (1) White interior, in lieu of standard
9. Unit to operate with R404a refrigerant connected to remote rack system item #C124
10. Remove castors and legs - unit to sit on a millwork base.
11. Refer to Remote Refrigeration Detail MWK-125 on Typical Installation Detail Sheet.
12. NOTE: Receptacle for unit to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.
13. Verify color selection with designer - Custom Colors will be additional upcharge

ITEM # C123 SELF-SERVICE REFRIGERATED MERCHANDISER, REMOTE
Quantity: One (1)
Manufacturer: Structural Concepts
Model: B4732

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B4732 Oasis® Self-Service Refrigerated Merchandiser, 47-5/8"W, high profile, open front, (4) non-lighted shelves, top light, Breeze-E (Type II) with EnergyWise self-contained refrigeration system, Blue Fin coated coil, one piece formed ABS plastic tub, black interior, full end panels with mirror, cETLus, ETL-Sanitation
2. One (1) NOTE: If GFCI is required, a GFCI breaker MUST be used in lieu of a GFCI receptacle
3. One (1) 1 yr. parts & labor warranty, 5 yr. compressor warranty, standard
4. One (1) Remote refrigeration with expansion valve, solenoid valve & thermostat (does not include condensing unit), requires floor drain
5. One (1) Electrical leads, standard with remote
6. One (1) Base Support: Levelers, standard
7. One (1) Interior: Stainless steel, in lieu of standard black
8. One (1) Exterior: Wilsonart® or Formica® PREMIUM laminates (as noted in laminate chart)
9. One (1) Lower front panel: Stainless steel [Requires Stainless Steel Exterior]
10. One (1) Left end panel: Full of mirrored interior, metal edging, standard
11. One (1) Right end panel: Full of mirrored interior, metal edging, standard
12. One (1) Exterior back panel: Solid back panel, black painted, standard
13. One (1) Digital fahrenheit thermometer, standard
14. One (1) Add Lights (LED) to standard shelves (4)
15. One (1) Price tag molding (matches interior color)
16. One (1) Roll-down security cover, locking (requires two end panels (full or cutaway) per case) but CANNOT be used with Case-to-Case acrylic end panel) (must be chosen when case is ordered)
17. Intended environment: designed to operate in ambient conditions of 75° f / 55% relative humidity
18. Color selection as per architectural finish schedule (Wilsonart or Formica Premium)
19. Provide shop drawings for review and approval
20. Note: Diffusers can disrupt cooling of air screens and create condensation in units. Keep air from blowing directly toward the cases. Minimum distance from HVAC diffusers/supply/return to be 10'. GC/FSEC to flag any conditions that may arise in the field.
21. Unit to operate with R404a refrigerant connected to remote rack system item #C124
22. Finish: PLAM - Wilsonart, Ebony Recon 7997-38

ITEM # C124 REMOTE REFRIGERATION CONDENSING RACK SYSTEM - RDT
Quantity: One (1)
Manufacturer: RDT
Model: ZS2-04Z-CT3-AEC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ZS2-04Z-CT3-AEC REMOTE REFRIGERATION CONDENSING RACK SYSTEM - RDT
2. ITEM NO. C124 REMOTE REFRIGERATION PACKAGE
The refrigeration package shall be pre-engineered, and factory assembled unit as manufactured by Refrigeration Design Technologies, (RDT) 1808 FM 66, Waxahachie, Texas 75167. Phone: 972-937-3215 fax: 972-937-0970 e-mail address: Info@rdtonline.com.

Contractor shall furnish and install, where shown on plans, (1) RDT U.L. approved air-cooled remote refrigeration package, model ZS2-04Z-CT3-AEC, with control panel, 208 Volts, 3 Phase, 60 Hertz. The refrigeration package shall be housed in a weather-protected compact structural-steel frame. The entire housing shall be brushed 304 stainless steel and include stainless steel louvered panels for access. The unit shall include an air-cooled, aluminum fin copper tube condenser designed to operate at 15 degrees TD. Frame to be welded galvanized steel. Lifting rings shall be installed at each corner to facilitate installations. Condenser motor fans shall be mounted within the enclosure. The condenser intake surface shall be protected with stainless steel louvered panels to protect against vandalism and hail damage.

Each unit shall be equipped with a ball-bearing fan motor, adjustable head-pressure control, suction filter, sight glass, drier, liquid line inlet and outlet valve and high-pressure super hose connections.

Warranties: All refrigeration systems are to include a 5-year compressor warranty, a 1-year parts warranty and a 1-year labor warranty. These warranties are to be built into the equipment price and not separate options.

3. **REFRIGERATION UNITS:**

Air-cooled condensing units shall be scroll type manufactured by Copeland. Each unit shall be equipped with high-low pressure control.

Liquid line drier, sight glass and head pressure control.

All compressor units shall be new factory assembled to operate with the refrigerant specified in the engineering summary sheet. Refrigerant R-448A or R404A shall be used on all commercial medium temperature units and low temperature units.

The condenser shall be sectional, removable, with rifled tube slotted finned, and shall be designed for 15°ftd.

Factory to review all project phasing and engineer system for multi-phase operation installing any gas pressure relief ports for temporary partial load operation until all phases of project are installed and connected to the system.

All compressors are to be properly labeled for type and equipment they are serving to allow proper maintenance and service.

4. **PRE-PIPING:**

All refrigerant lines shall be extended to one side of the package in a neat and orderly manner.

Suction lines must be insulated with Armaflex (1" thick for low temp, 3/4" thick for medium temp).

All tubing shall be securely supported and anchored with clamps.

Silver solder and/or sil-fos shall be used for all refrigerant piping. Soft solder is not acceptable.

All piping to be pressure tested with nitrogen at 300 psi. After the condensing unit and coil have been connected, the balance of the system shall be leaked tested with all valves opened.

5. **CONTROL PANEL:**

The package shall have a factory mounted and pre-wired control panel complete with disconnect for single point connection.

Electrical contractor shall provide and install main power lines to panel in accordance with the wiring diagram and per local codes.

6. **SAFETY CAUTION:**

Each system and evaporator are shipped under nitrogen pressure. Use caution and exercise safety at all times when preparing for final hook-up.

7. **EVAPORATOR COILS:**

Evaporator coils shall be direct expansion type, fabricated of copper tubes with aluminum fins. All evaporator coils shall be provided with solenoid valve, electronic expansion valve and piped and wired to the junction box for positive pump down. All evaporator coils shall be pre-wired to a junction box with an on/off switch and the liquid and suction lines shall be pre-plumbed and stubbed out the back.

Evaporator coils shall include an Eco-Smart controller for on-demand defrost and monitoring. Evaporator coils shall be equipped with energy saving "EC" motors.

8. **CONSTRUCTION NOTES FOR TRADES:**

It is the responsibility of each contractor to pull necessary permits for their respective work performed.

FOOD SERVICE EQUIPMENT CONTRACTOR:

The Kitchen Equipment Contractor shall verify all dimensions and coordinate with other trades. The Kitchen Equipment Contractor shall verify all required refrigerant line lengths and runs and to be detailed on shop drawing submittal.

GENERAL CONTRACTOR:

General contractor to verify and co-ordinate location of refrigeration rack with refrigeration contractor to satisfy local code requirements and maintenance of the rack.

General contractor to verify refrigeration line runs thru to roof or multi-story building prior to construction with refrigeration contractor for accessibility.

General contractor to verify access of crane or mechanical lift with refrigeration contractor prior to construction (if required).

General contractor shall prepare and weatherproof the platform and curbed openings for refrigeration piping and electrical conduit. Roof pad to be constructed of heavy-duty steel framing, and the finished height dictated per local codes.

Provide sheet metal cap with 2" high pitch pocket collar and watertight soldered joints.

General contractor to allow 3'-0" (36") of clear space around roof pad for maintenance.

All core drilling required for remote refrigeration piping work by the refrigeration contractor, is in the general contractor's scope of work. Coordinate exact location and number of penetrations with the refrigeration contractor and comply with all landlord requirements for x-ray of slab prior to work.

All sleeves, openings, holes, conduits, Orangeburg, required to run the refrigeration lines that are going through construction such as walls, floors and ceilings will be made and provided by the General Contractor. All openings, sleeves, sealers required in food service equipment will be provided by the Food Service Equipment Contractor.

Any attachment to building structure for load bearing weight to be provided and coordinated by general contractor.

General Contractor/Roofer to provide any required pitch pockets.

General contractor to backfill all pitch pockets to top with tar or pitch after refrigeration and electrical lines have been run.

General contractors shall provide any required concrete pads for installation of the rack system.

REFRIGERATION CONTRACTOR:

Refrigeration pipe sizes are based on a maximum line run up to 100 equivalent feet for liquid and suction lines. Refrigeration pipe sizes are to be verified with the RDT factory. Verify line lengths with job site conditions and line routing at individual installations. If line runs are greater than 100 feet, please contact the RDT factory.

Refrigeration contractor shall run all refrigeration lines which extend down thru wall(s) before wall(s) are closed up when conduit is not provided.

Refrigeration contractor to seal both ends of conduit with fomofil after all lines have been run. If pull box(es) are specified, they must be a minimum 12"x 12".

Refrigeration contractor shall insulate all refrigeration suction lines.

Refrigeration contractor shall verify location of blower coil(s) and compressor(s) for all refrigerated areas.

All liquid and suction lines are to have isolation ball valves installed on them behind the evaporator coils.

Refrigeration contractor shall verify location of pitch pocket(s) for refrigeration line penetration thru roof with general contractor. General contractor to install all pitch pockets.

Contractor shall use only clean dehydrated, sealed refrigeration grade A.C.R. copper tubing or type "L".

Use only long radius elbows to reduce flow resistance and line breakage.

Silver solder and/or sil-fos shall be used on all refrigerant piping. Soft solder is not acceptable. Use minimum 35% silver solder for dissimilar metals.

All piping must be supported with hangers that can withstand the combined weight of tubing, insulation, valves, and fluid in the tubing.

Use nitrogen in the copper tubing during brazing to prevent formation of copper oxides. Liquid and suction lines must be free to expand independently of each other. Do not exceed 100 feet without a change in direction or an offset. Plan proper pitching, expansion allowance, and p-traps at the base of all suction risers and at every 8 feet of every vertical rise. Install service valves at several locations for ease of maintenance. These valves must be approved for 450 psi working pressure.

All piping to be pressure tested with nitrogen at 300 psi with all valves open and held for 12 hours.

Electronic leak detectors shall be used to locate all leaks.

Complete system shall be evacuated to 500 microns with vacuum pump before charging the system.

Once system is charged and running, adjust all controls, including pressure controls and expansion valves.

Return after 24 hours to verify proper operation of systems.

Refrigeration contractor to provide and install drain line heater with insulation in freezer to be connected by electrical contractor.

Refrigerant suction lines outside of refrigerated compartments, not run-in conduit, shall be insulated back to compressor with Armstrong arma-flex ap-25/50 foamed plastic insulation or equal in accord with direction of the manufacturer. Minimum thickness shall be 3/4 inch for commercial temperature and 1.0 inch for low temperature.

Fill roof refrigeration and electrical pitch pockets with foam and sealant.

Refrigeration contractor to seal all refrigeration line penetrations made thru walk-in coolers/freezers and refrigerated base sections of counters.

Recommend using K-Flex Titan line sets instead of Armflex with added UV ray protection. Some states required to have UV protection by code. Contractor to review and comply with local codes. In all cases, line sets are not to be exposed to elements without any UV covering and or protection.

Nylon zip ties are not to be used to secure any flexible line sets to the compressor racks. Provide proper fastening methods as required by local codes.

ELECTRICAL CONTRACTOR:

Electrical contractor to provide main power for the refrigeration package and evaporator coils.

Electrical contractor to connect drain-line heater in the freezer.

All electrical wiring and installation shall be accordance with the wiring diagram and per local codes.

If contracted, electrical contractor to install all conduits for refrigeration lines in walls, prior to walls are closed up. All pull boxes must be a minimum of 12"x 12".

Nylon zip ties are not to be used to secure any flexible power conduit to the compressor racks. Provide proper fastening methods as required by local codes.

Disconnects when located on roof installations, mount high enough to clear any snow level ratings for the region.

Disconnect switches are to be weather tight and prevent any exposure to the elements.
Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.

NOTE: Receptacles for units that are built-into counters or millwork are to be installed to the left or right side of the unit for accessibility and resetting the GFCI as needed.

PLUMBING CONTRACTOR

Plumbing contractor to provide type "M" copper drain lines for walk-in refrigerator and freezer, pitched 1/2 inch per foot of run. In freezer, heated drain line must be insulated to prevent freezing. Trap drain lines outside of refrigerated space to avoid entrance of warm and moist air.

Contractor to provide individual drain line for each evaporator unless otherwise called for in the plans.

Plumbing contractor to provide refrigeration PVC sleeve conduit runs through underground to all serviced refrigeration units.

All conduit is to be capped and waterproofed.

Provide access points and pull boxes are required by installer, refer to pull box detail.

All plumbing installation shall be in accordance with local codes.

9. **TESTING:**

Testing notes are included with refrigeration contractor responsibility section.

10. **OPERATION AND MAINTENANCE INSTRUCTIONS:**

The rack system shall be supplied with a complete set of installation, operational and maintenance instructions to cover operating procedures and routine maintenance schedule.

11. **SHOP DRAWINGS AND SUBMITTALS:**

Refer to food service manufacture specification drawings for more information. FSEC to submit shop drawings for review and approval before starting manufacturing.

12. **CLOSEOUT:**

A close out package to include the following:

Testing/Certification Report as outlined above

Operation and Maintenance Manual package as outlined above

As Built Drawing showing refrigeration pipe runs and all installation conditions, service access points, etc.

Pictures of piping installation before building structures get closed in.

13. **SYSTEM INSTALLATION VERIFICATION - SIV (NOT OPTIONAL):**

Food Service Equipment Contractor shall secure System Installation Verification (SIV) Manufacturer Service from ColdZone - rack manufacturer to perform an SIV two times during the duration of the project. The SIV is to be by an ColdZone engineer or an ColdZone certified refrigeration mechanic.

First SIV, is to supervise the dealer installation of the refrigeration rack, evaporator coils, refrigerant lines etc. providing oversight, direction and inspecting line set installation.

The final SIV will be performed during the start-up of the system. Any field related discrepancies that are discovered during the SIV will be brought to the attention of Food Service Equipment Refrigeration Contractor, General Contractor, and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SIV Manufacturer Service will address any discrepancy that is the fault of the manufacturer at no cost. If SIV Manufacturer Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by SIV Manufacturer Service or direct respective trades to remedy those issues.

The Food Service Equipment Refrigeration Contractor installer is to inform RDT's engineer if the installation and start up will take place at the same time, or if the startup will be at a later date. If the startup will be at a later date, the installer is to inform RDT's engineer to schedule the SIV dates.

The warranties will not go into effect unless this procedure is followed.

ITEM # C125 S/S CURB
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Curb
2. Custom S/S Curb size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. Refer to detail #FAB-30.

ITEM # C300 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 23001.0006

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 23001.0006 23001.0006 CWTF15-APS Airpot Coffee Brewer, automatic, brews 3.8 gallons per hour capacity, digital circuitry with timer function operated by front panel switches, hot water faucet, plastic funnel, accommodates (1) 1.9-to-3.0-liter airpots, stainless decor, 120v/60/1-ph, 1370w, 11 amps, NEMA 5-15P
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # C300.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: Two (2)
Manufacturer: BUNN
Model: 42750.0000

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # C400-C415 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:

- Item C400 – Spare Number
- Item C401 – Condiments Counter
- Item C402 – POS Counter
- Item C402.1 – Pull-out Waste Basket, Single (Rev-A-Shelf, RV-35)
- Item C402.2 – Sneezeguard System, Jewelry Case
- Item C403 – Espresso Counter
- Item C404 – Front Counter
- Item C404.1 – Pull-out Waste Basket, Double (Rev-A-Shelf, RV-35)
- Item C404.2 – Plate Pull-Out Drawer
- Item C404.3 – S/S Corner Guard (Qty. of 2)
- Item C404.4 – Lights, LED
- Item C404.5 – Plate Pull-Out Drawer
- Item C405 – Merchandise Counter
- Item C405.1 – Lights, LED
- Item C406 – Merchandise Counter
- Item C406.1 – Lights, LED
- Item C407 – Spare Number
- Item C408 – Condiments Counter
- Item C409 – Merchandise Counter
- Item C409.1 – Lights, LED
- Item C410 – Tray/Trash Return Counter
- Item C411 – Front Counter
- Item C412 – Dutch Door
- Item C413 – C-Store Shelving
- Item C413.1 – Lights, LED
- Item C413.2 – Lights, LED
- Item C413.3 – Lights, LED
- Item C414 – Merchandise Counter
- Item C414.1 – Lights, LED
- Item C415 – POS Surround

B. **MANUFACTURER:**

Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com

C. **SUBSTITUTIONS:**

Substitutions: no substitutions/alternate manufacturers shall be accepted.

D. CERTIFICATION:

AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.

UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.

NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.

E. GENERAL CONDITIONS:

Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.

F. RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDED BY OTHER TRADES:

1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl, or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated, and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
(1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** Stained Wood Finish or P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.

8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs, and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides.

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED:** FINISHED - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR:** APPLIED PANEL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR:** FINISHED - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE:** TOP STRETCHERS or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL TOP - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE:** FULL BOTTOM with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL BOTTOM with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS:** FULL BACK - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moister barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer front selections.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **FLAT WOODEN:** Custom Design to be determined by client.
5. **PANELED WOOD:** Custom Design to be determined by client.
6. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.
7. **FRAME-ONLY GLASS:** Shall be 3/4 " thick frame, laminated both sides with HPL or be stained/painted veneer. Glass shall be clear acrylic and shall be retained in openings with removable glazing. Doors shall be available for both sliding and hinged designs. Custom Design to be determined by client.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **GATE HINGES – DUTCH DOOR:** DOUBLE ACTING - BOMMER 7114-603 Adjustable Spring tension hinge SINGLE ACTING – McKinney MacPro MPS60 Adjustable Spring tension hinge. Hinges to be installed at top and bottom of the door.
3. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
4. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
5. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All looks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.

6. **LOCKS – DUTCH DOORS:** Provide Progressive Hardware Model #R1000 Bolt Lock. Mount sideways on operator side. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin. Refer to typical detail MWK-115.
7. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
8. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
9. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
10. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
11. **LED LIGHTS - WALL CABINETS:** All wall cabinets to be provided with SuperBrightLEDs Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft., housed in a L-TASK-12F LED Aluminum Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of cabinets. Installed below wall cabinet with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured inside a wall cabinet to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall below wall cabinets. Millwork fabricator to provide LED lights and install in wall cabinets complete with all interconnections.

12. **LED LIGHTS - MERCHANDISE SHELVING:** All merchandise shelves to be provided with SuperBrightLEDs Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft., housed in a L-TASK-7D LED Aluminum Corner Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of shelving. Installed below each shelf in front end corner of shelf with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured to side of a shelf to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall location determined by electrical engineer. Millwork fabricator to provide LED lights and install in merchandise shelving complete with all interconnections.
 13. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 ½" unless required by site conditions.
 14. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors, or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
 15. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
 16. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
 17. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering); Refer to architectural/interior design documents for finish selections and locations.
 18. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 19. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 20. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 21. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
- K. EQUIPMENT INTEGRATION & PROTECTION:**
1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
 2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.

3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
 4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
 5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
 6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
 7. **AIR FLOW & VENTALATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.
- L. **COORDINATION:**
1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
 2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
 3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.
- M. **SUBMITTALS:**
1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
 2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
 3. Include MEP sheet if a part of the Scope.
 4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
 5. Submit samples of exposed material colors and hardware as requested by the architect/owner.
- N. **JOB CONDITIONS**
1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
 2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
 3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.

4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent, or excessive changes in temperature or humidity level over the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
 5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
 6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location, and sequence of construction.
 7. All cut-outs and holes for mechanical, plumbing, and electrical work shall be made at the project site by respective trades.
 8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
 9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or FLOORS in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
 10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
 11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
 12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
 13. Walls and Partitions (whether framed, demountable or masonry) must be in place.
 14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
 15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
 16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
 17. Elevator, hoist, or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
 18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.
- O. **INSTALLATION, QUALITY ASSURANCE AND WARRANTY:**
1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
 2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.

3. Install and trim millwork to walls, floors, ceiling, and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking, or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care, and maintenance of custom millwork.
7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # C500	POS SYSTEM, SMALLWARES
Quantity:	One (1)
Manufacturer:	Pioneer
Model:	S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # C501 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # C502 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # C503 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # C600 DUAL (DUPLEX) CONVENIENCE RECEPTACLE, BY EC
Quantity: One (1)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY EC DUAL (DUPLEX) CONVENIENCE RECEPTACLE
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # C700-C705 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
Item #C700 – Floor Sink
Item #C701 – Area Floor Drain
Item #C702 – Floor Sink
Item #C703 – Floor Sink
Item #C704 – Floor Sink
Item #C705 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

IL – CENTRAL KITCHEN

ITEM # K100 TRACK SHELVING SECTION
Quantity: One (1)
Manufacturer: Metro
Model: TTS14NA

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TTS14NA Super Erecta®, MetroMax® Q™ Top-Track Track Set, 14 ft., includes: necessary sections of track for assembling track runs, NSF

ITEM # K100.1 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. One (1) Model MQTTE24 MetroMax® Q™ Top-Track Stationary End Unit Kit, 24"W, includes: (8) 86"H epoxy coated steel posts, hardware necessary for connecting stationary end units to track (shelves sold separately), NSF
3. Four (4) Model MQTTM24C MetroMax® Q™ Top-Track Mobile Unit Kit, 24"W, includes: (4) MQ74UPE 74"H epoxy coated steel posts, chrome plated rigid casters, caster channels, bumpers & roller assemblies (shelves sold separately), NSF
4. Eighteen (18) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
5. Six (6) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K101 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2436G MetroMax® Q™ Shelf, 36"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2436F MetroMax® i Shelf, 36"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K102-K102.5 & K105-K105.5 WALK-IN BOX COMBO KIT:
Quantity: One (1)
Manufacturer: Thermo-Kool
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM To include the following items:
 - Item #K102 - Cooler, Walk-In Box
 - Item #K102.1 - Cooler Evaporator (RDT, Custom)
 - Item #K102.2 - Cooler Compressor (RDT, Custom)
 - Item #K102.3 - Junction Box, Heat Tape
 - Item #K102.4 - Temperature Monitoring
 - Item #K102.5 - Air Shield (Mars Air Systems, Custom)
 - Item #K105 - Freezer, Walk-In Box (RDT, Custom)
 - Item #K105.1 - Freezer Evaporator, Double (RDT, Custom)
 - Item #K105.2 - Freezer Compressor (RDT, Custom)
 - Item #K105.3 - Freezer Junction Heat Tape
 - Item #K105.4 - Temperature Monitoring
 - Item #K105.5 - Air Shield (Mars Air Systems, Custom)
2. **GENERAL SPECIFICATIONS:**
The THERMO-KOOL walk-in specified shall be prefabricated modular construction. It shall be designed and constructed to allow fast and easy field assembly, disassembly, relocation, and enlargement by the addition of like modular panels. Walk-in shall be designed and constructed as shown on plan. Overall size of walk-in shall be actual dimensions to fit exact job site requirements.

3. **PANEL CONSTRUCTION:**

Wall and ceiling panel widths shall be within 1" increments up to 46" wide. Corner panels shall be 90-degree angle, 12" x 12". All panels shall be interchangeable with like panels for fast and easy assembly.

Partition panel placement shall be within 1" increments to meet shelving space requirements.

All panels shall consist of metal pans formed to precise dimensions. Metal finish to be as specified. Insulation shall be "foamed-in-place" urethane to bond permanently to complete inner surfaces of both interior and exterior metal pans to form strong rigid unit. Panels shall not have internal wood or metal support, framing, straps, or other non-insulating members. Each panel shall be 100% urethane foam insulation exclusive of metal pans. Perimeter structure shall be formed of DURATHANE, high density urethane insulation forming tongues and grooves to assure vapor and airtight joints and to prevent pre-installation damage and deterioration of exposed urethane surfaces.

4. **WARRANTY:**

Panels shall be covered by a Ten-Year Factory Warranty

5. **INSULATION:**

Insulation shall be 4" or 5" thick rigid, zero ozone depleting HFC 134a blown Class I urethane foam classified according to UL 723 (ASTM-E-84) as tested by Underwriters Laboratories, Inc. The core material has a flame spread of 25 or less and a smoke density of 250.

The urethane foam is foamed-in-place to bond to inner surfaces of metal pans having an average thermal conductivity (K factor) of 0.13 BTU/hr./sq. ft. per degrees /Fahrenheit/inch: and an overall coefficient of heat transfer (U factor) of not more than .0312. As tested in accordance with ASTM C 518-2004, the R factor for coolers at temperatures of 55 F is greater than 29.0 for 4" thick and greater than 36.0 for 5" thick panels; for freezers at temperatures of 20 F° the R factor is greater than 32.0 for 4" thick and greater than 40.0 for 5" thick panels.

The prefabricated urethane foamed panels shall be supplied with a Class I fire hazard classification according to UL 723 (ASTM-E-84) as tested by Underwriters Laboratories, Inc. Panels shall have a flame spread rating of 25 or less and bear a certifying Underwriters Laboratories, Inc. label.

This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions

6. **METAL FINISHES:**

Metal finishes on exterior exposed to be Stucco stainless steel, unexposed stucco galvanized, and interior surfaces are to be .040 White Stucco Embossed Aluminum.

7. **PANEL LOCKING ASSEMBLIES:**

Assembly of walk-in shall be accomplished by "Insta-Loks" consisting of cam-action hook arm assembly set in one panel and a self-aligning, self-centering, pin assembly set in the matching panel. All vertical joints must have a minimum of three Insta-loks. Rotation of the cam-action hook arm shall pull and lock panels together to form airtight, vapor proof joints. No metal straps or connecting rods shall be used inside the panels. Rotation of the cam-locks shall be operated from inside the walk-in through access ports that are sealed with vinyl snap-in closures.

8. **PANEL GASKETS:**

NSF listed double-bead vinyl gasket shall be applied to the tongue side of all panels, on both interior and exterior. Gaskets shall be impervious to stains, grease, oils, mildew, sunlight, etc.

9. **ENTRANCE DOOR AND FRAME:**

Walk-in compartment shall be equipped with a 36" x 78" (contact factory for additional sizes) hinged-type, flush-mounted entrance door mounted in a nominal 4', 5' or 6' frame and located in exact location as shown on drawing. Door placement shall be within 1" increments to meet shelving space and job site requirements. Door shall be manufactured to accommodate floor construction. Door and frame shall be listed by Underwriters Laboratories and bear the UL Seal of Approval and be equipped with the following:

Door shall be equipped with a one-piece perimeter PVC accordion type removable gasket with magnetic core at the top and along the side perimeter of the door. An adjustable wiper gasket shall be mounted along the bottom edge of the door.

- Latch shall be break-a-way type with cylinder lock and inside safety release handle so the door can be opened from the inside even if locked. A positive action hydraulic door closer shall be included to ensure gentle closing action of door to opening and to ensure positive closing of door. The latch shall be of high-pressure zinc die cast with highly polished chrome finish. Hinges shall be nine-inch modified strap, cam-lift, self-closing design with door lift off capability of high-pressure zinc die cast with highly polished chrome finish. Door frame shall consist of heavy reinforced steel "U" channel frame to encompass entire perimeter of opening, foamed-in-place to give extra support and rigidity to frame and to prevent racking, distortion, warping and twisting. A backup must be welded for added strength. An armored anti-sweat heater cable shall be run in a breaker strip located behind a removable heavy gauge stainless steel trim for easy access to heater cable. A Thermostatically controlled door frame heater cable shall be run under Threshold consisting of heavy reinforcement "U" channel breaker strip and heavy gauge stainless steel threshold. A second heater wire shall be provided. Door section shall be provided with an operating toggle switch and pilot light mounted on the exterior side of the door frame. An incandescent vapor proof light and face mounted inlet box shall be mounted on the interior side of the door frame for 115-volt, 60 cycle, 1 phase A.C. service. All wiring shall be in concealed rigid conduit. A 2-1/2" diameter chrome face, flush mount, dual reading, adjustable dial thermometer shall be provided on exterior of door section to provide temperature reading of -40 degrees C to +150 degrees C. A foot treadle shall be provided on the door to assist for hands free door operation.
10. **TREADBRITE KICKPLATES:**
Door and frame shall have 1/8" aluminum diamond treadplate kickplates 36" high on the interior and exterior. Diamond treadplate kickplates shall be mounted with adhesive and sealed with silicone. No external fasteners such as screws or pop rivets shall be applied as fastening for the diamond treadplate kickplates.
11. **HEATED PRESSURE RELIEF VENT:**
Freezer shall be equipped with a two-way heated pressure relief vent to equalize pressure between the interior and exterior caused by defrost cycles and opening of door. Electrical service to be 115v/60/1 phase.
12. **FLOOR CONSTRUCTION:**
Walk-in floor shall be fabricated similar to other panels and be designed to withstand uniformly distributed stationary loads of 600 lbs. per square foot. Interior surface of floor panels to be foamed-in-place 1/8" aluminum treadplate DURA-Floor
For recessed floor with tile application, 14 Ga. Galvanized surface will be provided. Verify the tile thickness.
THERMO-KOOL DURA-FLOOR: For additional stationary floor load strength of up to 12,000 lbs. per square foot THERMO-KOOL's DURA-FLOOR shall be provided which shall consist of an interior surface of foamed-in-place 1/8" Aluminum Treadplate with high density urethane support structures foamed-in-place on interior of floor panel and firmly attached to a foamed-in-place plywood subfloor.
13. **INTERIOR RAMP:**
To eliminate a step-up the walk-in shall be equipped with an interior built-in foamed-in-place ramp at entrance door. The interior ramp shall have an NSF approved cove and have a non-skid surface and be equipped with a threshold and heater wire on freezer applications. Interior ramp shall be width of door opening x 24" depth.
14. **LED LIGHT FIXTURES:**
Additional illumination is provided with 4' LED Sani-light fixtures model #D48-2S Germicidal UV irradiator with bulbs and shall be provided in quantity as shown on plan.

15. **ALARM:**
Each compartment shall be equipped with TK4700 walk-in monitor system. Alarm package includes door status monitoring, automatic lighting control, easy to read blue OLED display, compartment identification and door/door frame/peep window heater control. Controls include panic alarm with TK4 interior panic button, power fail alarm, door open alarm, high/low temperature alarm, temperature probe failure alarm and real time clock with automatic DST adjustment. The alarm will activate when temperature rises or falls above/below desired settings. Alarm to also have door open alarm and auto-off light manager that shuts lights off if left on longer than 15 minutes. Dry contacts are included for remote notification. Temperature probe is to be located in the return air stream of evaporator coil. Control panel shall be located at door frame of compartment being monitored. TK4700HL alarm is provided with built-in USB 2.0 for HACCP compliance.
16. **TEMPERATURE MONITORING:**
Provided with Thermo-Kool temperature monitoring system able to monitor, record and send alerts.
Cost of monitoring system is to be included in base of equipment, there shall be no monthly charges or subscriptions for this service.
17. **TRIM AND ENCLOSURES:**
Trim matching the walk-in finish and fabricated to fit building conditions shall be supplied to close all joints between walk-in and building walls. Enclosure panels matching the walk-in finish shall be supplied to close off space between top of walk-in and building ceiling.
18. **REFRIGERATION:**
Basic refrigeration components shall consist of a condensing unit of the scroll. Condensing units shall be factory assembled and UL approved. The condenser shall be air-cooled. Refrigerant for medium temperature systems and the low temperature system shall be R448-A.
See quote for model numbers.
Evaporators shall be forced air type with air flow parallel to the walk-in ceiling. Evaporators shall be a standard low-profile series. All evaporator coil components shall be housed in heavy gauge aluminum housing. Units shall have drain pan with drainpipe connection.
Condensing unit voltage to be 208-230/60/1.
Units shall have drain pan with drainpipe connection. Evaporators shall be equipped with an automatic electric defrost system including coil heaters, time clock, fan delay control, drain line heaters and liquid line solenoid.
The basic components shall be supplied as specified Remote Preassembled, and shall include condensing unit, evaporator coil, control kit (pressure control, thermostat, liquid line drier, sight glass, suction line vibration eliminator, expansion valve and evaporator coil mounting kit), defrost timer, fan delay control and liquid line solenoid. All parts shall be factory mounted.
Remote Preassembled systems require tubing, electrical hook-up, drain line and refrigerant charge supplied by qualified refrigeration, electrical and plumbing contractors.
A low ambient kit and weatherproof housing shall be supplied with condensing units. The low ambient kit shall consist of a crankcase heater and headmaster valve.
The unit shall include IntelliGen Controller with Webserver Card.
19. **DRAIN LINES:**
All evaporator coils shall be provided with proper sized drain lines, supplied and field installed by contractor. Drains shall be trapped outside of walk-in. Drain shall be heated and insulated to prevent freezing. All plumbing is to be in accordance with applicable codes.
20. **NSF CONSTRUCTION:**
The walk-ins provided in the above specifications shall be constructed in accordance with National Sanitation Foundation, Standard No. 7. The NSF approval seal shall be affixed to the serial plate of the walk-in.
21. **QUALITY INSPECTION REQUIREMENTS & INSTALLATION:**
Walk-ins shall be set up at the manufacturer's facility prior to shipment and a quality control inspection performed on the product. A digital photograph of the walk-ins set up at the manufacturer's facility shall be provided for the Food Equipment Contractor's permanent records.

22. **ELECTRICAL:**

The tops of the walk-in shall be drilled and fitted with conduit for electrical wiring. No exposed conduit will be allowed on the interior of the walk-ins. All conduits shall be routed above the ceiling sections.

The Electrical Contractor will provide and install electric power supply disconnects at the condensing unit location and evaporator location. The FSEC will furnish all necessary control and power wiring between the condensing unit and evaporator, heating wires, lights, control switches, etc. as required to place all refrigeration systems into satisfactory operation. Freezer sections drain to be covered with heat tape, heat tape to be provided by electrical contractor. Power connection to be made to a separate circuit provide by Electrical Contractor.

Please Note: It is recommended for all electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I.

23. **PLUMBING & DRAIN LINES:**

The FSEC shall furnish and install hard temper L copper waste piping from the evaporator drain to the nearest floor sink. Waste piping shall have two coats of aluminized paint and shall be wrapped with electric heating coil to prevent freezing. All plumbing is to be in accordance with applicable codes.

24. **START-UP:**

FSEC to Provide start-up and testing of complete system.

FSEC to Set and adjust all temperature and defrost cycles.

Cooler to operate at +35 degrees Fahrenheit and Freezer to operate at –10 degrees Fahrenheit.

25. **INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS:**

The walk-ins shall be supplied with a complete set of installation, operational and maintenance instructions to cover erection of the walk-in, installation operating procedures and routine maintenance schedule.

Bidders must obtain prior approval if not bidding specified items. Any and all variances in construction, design, performance, and accessories from the item specified must be submitted in writing to the owner supervisor in addition to detailed manufacturers specifications ten days prior to bid opening.

Successful KEC responsible for delivering and erecting walk-in and completing installation of refrigeration systems including drain lines. All plumbing and electrical by others.

26. **SHOP DRAWINGS AND SUBMITTALS:**

Refer to food service manufacture specification drawings for more information.

ITEM # K103 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Twelve (12) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Six (6) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Six (6) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Nine (9) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. Three (3) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K104 TRACK SHELVING SECTION
Quantity: One (1)
Manufacturer: Metro
Model: TTS9NA

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TTS9NA Super Erecta®, MetroMax® Q™ Top-Track Track Set, 9 ft., includes: necessary sections of track for assembling track runs, NSF

ITEM # K104.1 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. One (1) Model MQTTE24 MetroMax® Q™ Top-Track Stationary End Unit Kit, 24"W, includes: (8) 86"H epoxy coated steel posts, hardware necessary for connecting stationary end units to track (shelves sold separately), NSF
3. Three (3) Model MQTTM24C MetroMax® Q™ Top-Track Mobile Unit Kit, 24"W, includes: (4) MQ74UPE 74"H epoxy coated steel posts, chrome plated rigid casters, caster channels, bumpers & roller assemblies (shelves sold separately), NSF
4. Fifteen (15) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
5. Five (5) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K106 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Twenty-Four (24) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Twelve (12) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Twelve (12) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Six (6) Model MQ2436G MetroMax® Q™ Shelf, 36"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. Two (2) Model MX2436F MetroMax® i Shelf, 36"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. Three (3) Model MQ2442G MetroMax® Q™ Shelf, 42"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
8. One (1) Model MX2442F MetroMax® i Shelf, 42"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
9. Three (3) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
10. One (1) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
11. Six (6) Model MQ2454G MetroMax® Q™ Shelf, 54"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 600 lb. capacity per shelf, NSF
12. Two (2) Model MX2454F MetroMax® i Shelf, 54"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 750 lb. capacity per shelf, NSF
13. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
14. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K107 SPARE NO.

ITEM # K108 SPARE NO.

ITEM # K109 SPARE NO.

ITEM # K110 MEAT SLICER
Quantity: One (1)
Manufacturer: Bizerba
Model: GSP H I 90

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model GSP H I 90 Manual Heavy Duty Illuminated Safety Slicer, 13" blade, 8-safety interlocks, seamless anodized aluminum construction, high carriage 25° incline towards operator, 40° gravity feed, thumb guard 3.5" W, removable pusher-plate, remote sharpener with spring-loaded dial, slice thickness 0-0.94", 1/2 HP, 120v/60/1-ph, 3.5 amps, 0.4kW, cord with NEMA 5-15P, ETL-Sanitation, UL-157 gaskets & seals, cETLus, DGUV safety tested
2. One (1) Model STANDARD WARRANTY 1-year parts, labor, & travel time during normal Bizerba working hours within the (50) US, standard
3. One (1) Model INSTALLATION Installation, Start-up & Training (IST) included with purchase, count on us for a proper IST, it includes labor & travel time during normal & local Bizerba working hours within the (50) United States, please contact Bizerba for scheduling your IST, toll-free 1-800-229-3115 or email: us.service@bizerba.com, standard
4. One (1) Model BIZ H1 CAN Food grade H1 service oil, ONE (1) aerosol spray can 13.5 fluid oz. (400ml)
5. One (1) Model GSP H-HD-VC-1 Vegetable Chute, 7" dia. X 12" L with stomper GSP H & HD series ONLY
6. One (1) Model GSP BLADE-13 Bizerba Genuine Replacement Blade, 13" diameter, (4) hole, 60-62 Rockwell hardness at the edge, for use with GSP Series, SE8 & SE12/A400 RA models
7. One (1) Model GSP SHARPENER Bizerba Sharpener Replacement, complete assembly for models GSP H I, GSP HD I, GSP H, GSP HD GSP V, SE 12, SE12D
8. One (1) Model GSP BLADE-COVER Bizerba Blade Cover Replacement, complete assembly for models GSP H I, GSP H, GSP HD I, GSP HD, GSP V, GSP V 1-150, GSP V 2-150
9. One (1) Model GSP 4H-LEGSET 4" Legs (set of 4), in lieu of side-lift-arm

ITEM # K110.1 EQUIPMENT STAND, FOR MIXER / SLICER
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3030SEM-ST-CAH

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3030SEM-ST-CAH Equipment Stand, mobile, 27-1/8"W x 31-1/8"D x 34"H, 600 lbs. maximum capacity, 14/304 stainless steel top, box marine edge on all sides, removable pan rack holds (5) 18" x 26" pans, fixed stainless-steel undershelf, Uni-Lok® gusset system, fully welded construction, stainless steel legs, 5" swivel casters with resilient tread (2 braked)

ITEM # K111 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3696STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3696STEM-BS Spec-Master® Marine Series Work Table, 96"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (6) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #K111.2, sink, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # K111.1 SHELVING, WALL MOUNTED
Quantity: Four (4)
Manufacturer: Eagle Group
Model: SWS1548-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model SWS1548-14/3 Snap-n-Slide® Shelf, wall-mounted, 48"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 180 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Four (4) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K111.2 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # K111.3 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K111.4 DRAWER
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle

ITEM # K111.5 SHELVING, WALL MOUNTED
Quantity: Two (2)
Manufacturer: Eagle Group
Model: SWS1560-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SWS1560-14/3 Snap-n-Slide® Shelf, wall-mounted, 60"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 225 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Two (2) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K112 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K112.1
9. Owner to provide towel & soap dispenser.

ITEM # K112.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K113 ROLL-IN REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RIS-1D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RIS-1D-S1-HC UltraSpec™ Series Refrigerator, Roll-in, one-section, self-contained refrigeration, 34.86 cu. ft. capacity, stainless exterior & interior, standard depth cabinet, (1) full height 20-gauge stainless steel door, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2-year warranty, stainless steel breakers, stainless steel ramp, 1/3 HP, cULus, UL-Sanitation, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 6.5 amps, cord with NEMA 5-15P
6. One (1) Door hinging: on left at factory

ITEM # K113.1 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: AXD1818

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model AXD1818 Bun Pan Rack, LifeTime Tough, EXTRA Heavy-Duty Series, 22"W x 26"D x 64"H, Aluminum Construction, End Load, 3" Angle Spacing, (18) 18" x 26" or (36) 13" x 18" pans (2 per shelf), 5" x 2" Heavy-Duty Swivel Plate Casters w/ Zerk Grease Fitting model # CPS25U, Made in USA, NSF
2. One (1) Lifetime warranty for traditional foodservice applications
3. One (1) Model /015 Pan Stop, web-strap
4. One (1) Model /5B Caster Brakes, heavy duty (set of 2)
5. FSEC to verify that racks will fit roll-in (item number #K113) properly.

ITEM # K114 EXHAUST HOOD
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. **CONSTRUCTION:**
Ventilators to be constructed of #18-gauge, type 304 stainless-steel. Ventilators to have an all-welded exterior, ground and polished. Ventilators are ETL Listed to UL Standards, ETL Sanitation Listed, and built-in compliance with NFPA pamphlet No. 96, BOCA, ICBO and SBCCI
Provide a concealed, full length grease trough, accessible from the top for cleaning, with removable, concealed grease cup on one end.
Provide insulation on all exposed sides (recommended when supply air is below 55° F).
Provide make-up air through a front plenum, installed in ceiling, at front of hood. Make-up air shall consist of duct collars, air volume and fire dampers, plenum, air diffuser baffle and ceiling installed discharge registers. Hood shall be designed and installed to automatically activate exhaust fan(s) whenever cooking operations occur. Activation of exhaust fan(s) shall occur through an interlock with cooking appliances, by means of thermostatic heat sensors or by means of other approved methods.
4. **CONTROLS/SWITCHES:**
FSEC shall provide an EMS – Energy Management System control panel with light and fan switches, wall mounted, in a location near hood and shall be easily accessible and factory pre-wired. Electrical Contractor to interconnect to fire suppression system and fan(s). Location of control panel/switches shall be verified before installation.
Room Temperature Sensor - Room temperature sensor is used to automatically activate fans when temperature in the exhaust duct exceeds 15 degrees Fahrenheit of room temperature.
Mounting and wiring of room temperature sensor to control panel to be done by Electrical Contractor. Two strand 18 AWG thermostat wire provided by Captive-Aire. Room temperature sensor to be field installed in a safe location free of influence from external heat sources. Do not install room temperature sensor on an external wall. Temp sensor to be located between 5-25' distance from hood.
5. **LIGHTS:**
Provide each ventilator with UL listed Component Hardware recessed 4' LED light fixture, #L82-1040-L22N wired to a main junction box. 22 Watts.
6. **DUCTWORK:**
Exhaust and supply duct collars to extend 6 above the finished ceiling for connection to overhead ductwork. Ductwork to be furnished and installed by the HVAC contractor.
Duct collars to be shipped loose for positioning in field and clearing any obstructions allowing flexibility during installation.
7. **FANS:**
Exhaust and supply air system shall be provided with proper air quantities and velocities for proper exhaust extraction and to maintain a balanced condition within the exhaust hood and surrounding building environment. See hood sheets for CFM requirements.
Exhaust and supply fans to be furnished and installed by the HVAC contractor.
8. **FILTERS:**
Furnish easily removable filters. Horizontal baffles to extract and retain grease out of the air stream. Filters to be Stainless Steel High Efficiency Baffle Filter with Handles and Bottom Hanging Hook, UL Classified. Particulate Capture efficiency, 93%, efficient at 9 microns, 74% efficient at 5 microns. NSF approved.

9. **WALL PANELS:**
Furnish and install 22-gauge stainless-steel wall panels extending from the bottom of the rear of the exhaust hood to the upper edge of the baseboard molding and extending along the full length of all wall surfaces (left, right and rear). Wall panel sections shall be joined with stainless steel divider bars to allow panel sections to fit tightly against the wall and to result in watertight seams. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction. Seal end seams with General Electric clear silicone sealer. Wall panels to be insulated if applied to combustible material.
10. **TRIM:**
FSEC to furnish and install 18-gauge s/s enclosures from top of ventilators to the finished ceiling along all exposed sides, both ends and underside above stub wall to enclose spaces. Verify height of enclosure trim in field.
11. **FINISHES:**
Hoods are specified with decorative finish, hood to be provided with 1" insulated standoff with decorative finishes as specified on all exposed sides. This is to provide a 0" clearance rating per hood manufacturer listing. If the intent is to cover the hood with decorative stainless, laminate, or other panels, this material can be applied directly to the hood using adhesive or fasteners under 1" in length. Decorative finish to be supplied and installed by FSEC.
When installing a large or heavier surround such as tile, coordinate a soffit to be dropped around the hood. This will better support the weight of the cement board and tile. Soffit and tile to be provided and installed by GC. Refer to architectural details.
Refer to "EXH-13 - Hood - Decorative Fascia Finish Detail" for additional information.
12. **FIRE PROTECTION SYSTEM:**
Fire Cabinet, to house fire suppression system and hood controls. FSEC to verify which side of hood and ensure cabinet doors clear for opening.
Hood to be pre-piped for Ansul Fire Protection System, Item #K114.2, there should be no field cutting or modifications to hood.
FSEC is responsible for coordinating installation with Fire Protection System, and cooking equipment.
13. **INSTALLATION:**
Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with 1/2" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
14. **COORDINATION:**
FSEC to coordinate final hood design with HVAC engineers and Contractor to ensure adequate space allocation for hood and verification of duct connection points, clearance above hood, etc. If combustible surfaces exist above the hood - provide 3M insulated stainless steel panel installed above hood for clearance compliance to combustible surfaces. Insulated panel to extend 18" past hood on sides and front.
FSEC to verify rough and finish ceiling heights for final hood dimensions and trim requirements. Applicable trades shall connect building rough ins to hood control cabinet and hood and make all necessary interconnections from the control cabinet to the hood and fans.
Structural engineer shall be responsible for reviewing all hood information and shop drawings and providing an appropriate support structure.

15. **SYSTEM DESIGN VERIFICATION (NOT OPTIONAL):**

After completion of the hood installation and utility connections by site trades, Food Service Equipment Contractor shall secure CAS - "Captive Air Systems" Service to perform a System Design Verification (SDV). The SDV will be performed after all inspections are complete. Any field related discrepancies that are discovered during the SDV will be brought to the attention of Food Service Equipment Contractor, General Contractor, and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer at no cost. If CAS Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by CAS Services or direct respective trades to remedy those issues.

ITEM # K114.1 WALL MOUNTED CONTROL CABINET
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Wall Mounted Control Cabinet
2. **HOOD CONTROL PANEL**
MANUFACTURER: CAPTIVE-AIRE
MODEL: DCV-I 1 1 1
3. **FEATURES:**
DCV-1111 Demand Control Ventilation, w/ 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY THREE PHASE MOTOR REQUIRED to be sized by MEP engineers and provided by mechanical engineer. Room temperature sensor shipped loose for field installation. Dealer to verify distance between VFD and Motor and provide appropriate length.
Control package Includes 4 Duct Thermostat kits. – ESV371N02YXBS71 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS – ESV371N02YXB571 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA I Enclosure, with 2RJ-45 FOR MODBUS – 20 wide XI 8 tall X8.62 deep SS HINGED ELECTRICAL BOX NEMA I – VENTED. Install out of site/view from front of the house and in a recessed wall when possible. Do Not block ventilation ports and provide clearance around the enclosure.
Digital Prewire Lighting Relay Kit. Includes hood lighting relay & terminal blocks. Allows for up to 1400W of lighting each. – Thermistor CABLE – 18/2 AWG GREEN WHITE, plenum rated. USED for thermistor duct stat.
4. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each control package and additional construction information.

ITEM # K114.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by the Food Service Equipment Contractor and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork, and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests, and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless-steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by the FSEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch (4 micro switches furnished and installed by the FSEC) to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Electric Gas shut-off valve to be furnished by the FSEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. Gas shut off valve installation to be visible and accessible
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # K114.3 MANUAL FIRE PULL STATION
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Manual Fire Pull Station
2. Included in Fire Suppression System item #K114.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # K114.4 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Included with Fire Suppression System item #K114.2.
3. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
4. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube, and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
5. G.C. to provide blocking in wall.

ITEM # K114.5 S/S WALL FLASHING, HOOD
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Hood
2. Wall Panels are supplied as part of the hood package, item #K114.

ITEM # K115 COMBI OVEN, ELECTRIC
Quantity: One (1)
Manufacturer: RATIONAL
Model: ICP 6-FULL E

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ICP 6-FULL E (CC1ERRA.0000218 - E - 208/240V) iCombi Pro® 6-Full Size Combi Oven, electric, (6) 18" x 26" sheet pan or (12) 12" x 20" steam pan or (6) 2/1 GN pan capacity, (3) stainless steel grids included, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet interface, Wi-Fi enabled, includes (1) bucket of Active Green Cleaner & (1) bucket of Care Tabs, 208/240v/60/3-ph, 22.4 kW, IPX5, UL, cULus, NSF, ENERGY STAR®
2. One (1) 2 years parts and labor, 5 years steam generator warranty
3. One (1) Model CAP Chef Assistance Program
4. One (1) Model 8720.1563US Installation Kit, for electric iCombi/SCC/CMP 62 (208/60/3ph & 240/60/3ph); electric iCombi/SCC/CMP 202 (480/60/3ph)
5. One (1) Model 56.01.535 Detergent-Tabs Active Green for RATIONAL, iCombi, 150 pieces/bucket
6. One (1) Model 56.00.562 Care Tablets, bucket of 150 packets for all SelfCooking Center® units from 10/2008, with CareControl - Serial SG, SH or SI series
7. One (1) Model 56.00.598 Rational Defoamer Tabs, for all iCombi Pro, iCombi Classic, SelfCooking Center, and CombiMaster Plus (from 05/2017 onward) units, to reduce foaming in water types subject to severe foam build-up during cleaning, 120 tablets per bucket
8. One (1) Model 60.75.768 Heat Shield, for right side panel, type 6-full size Pro/Classic
9. Three (3) Model 6010.2101 Gastronorm Grid Shelf, 2/1 size, 25-5/8" x 20-7/8", stainless steel
10. One (1) Model 60.72.107 Starter Package, includes: (1) grill and pizza tray, (2) baking trays, & (2) granite-enameled containers
11. One (1) Model 60.72.108 Grill Package, includes: (2) grill and pizza trays & (2) diamond and grill grates
12. Three (3) Model 6015.1103 Gastronorm Perforated Baking Tray, 1/1 size, 12-3/4" x 20-7/8", aluminum with TriLax® coating
13. Three (3) Model 60.73.314 Diamond & Grill Plate, 1/1 GN
14. Three (3) Model 60.73.286 Roasting/Baking Pan, "small set", steel carrier plate (1/1 GN) with 4 pans (diameter 6-1/4"), TriLax® coating
15. Three (3) Model 60.73.287 Roasting/Baking Pan, "large set", steel carrier plate (1/1 GN) with 2 pans (diameter 10"), TriLax® coating
16. Three (3) Model 6019.1250 CombiFry Basket, 1/2 GN, 12" x 10"
17. One (1) Model 20.02.551P Door Gasket, for iCombi 6-full size Classic/Pro
18. Water Supply to have shut-off valve and back flow preventer furnished and installed by plumbing contractor.
19. Water supply to be hard copper tubing from water filter system. Do not direct connect without filter system.
20. Floor Sink to be located in steam free zone - not below combi oven.
21. Electrical contractor to provide shunt trip breaker.
22. FSEC to verify gas type
23. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
24. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software when it is made available.

ITEM # K115.1 COMBI OVEN, ELECTRIC
Quantity: One (1)
Manufacturer: RATIONAL
Model: ICP 10-FULL E 208/240V 3 PH (LM100EE)

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ICP 10-FULL E 208/240V 3 PH (LM100EE) (CE1ERRA.0000221 - E - 208/240V) iCombi Pro® 10-Full Size Combi Oven, electric, (10) 18" x 26" sheet pan or (20) 12" x 20" steam pan or (10) 2/1 GN pan capacity, (5) stainless steel grids included, intelligent cooking system with (4) assistants; iDensityControl, iCookingSuite, iProductionManager, & iCareSystem, (6) operating modes, (5) cooking methods, (3) manual operating modes, 85° to 572°F temperature range, quick clean, care control, eco mode, 6-point core temperature probe, retractable hand shower, Ethernet interface, Wi-Fi enabled, includes (1) bucket of Active Green Cleaner & (1) bucket of Care Tabs, 208/240v/60/3-ph, 37.4 kW, IPX5, UL, cULus, NSF, ENERGY STAR-®
2. One (1) 2 years parts and labor, 5 years steam generator warranty
3. One (1) Model CAP Chef Assistance Program
4. One (1) Model 9999.2252 RCI RATIONAL Certified Installation
5. One (1) Model 9999.2000 Pre-Installation Site Survey ensures that the site has proper space and connections for gas, electric, drain & water, can only be purchased with a Certified Installation, One Site Survey needed for every four (4) cooking systems.
6. One (1) Model 8720.1554US Installation Kit, for electric iCombi/SCC/CMP 102 (208/60/3 & 240/60/3); electric iCombi/SCC/CMP 202 (440/60/3)
7. One (1) Model 56.01.535 Detergent-Tabs Active Green for RATIONAL, iCombi, 150 pieces/bucket
8. One (1) Model 56.00.562 Care Tablets, bucket of 150 packets for all SelfCooking Center® units from 10/2008, with CareControl - Serial SG, SH or SI series
9. One (1) Model 56.00.598 Rational Defoamer Tabs, for all iCombi Pro, iCombi Classic, SelfCooking Center, and CombiMaster Plus (from 05/2017 onward) units, to reduce foaming in water types subject to severe foam build-up during cleaning, 120 tablets per bucket
10. One (1) Model 60.74.725 Combi-Duo Stacking Kit for iCombi 6-full size (electric or gas) on iCombi 6- or 10-full size (electric only)
11. One (1) Model 60.31.635 Mobile Combi-Duo Kit, 3-1/8"H, height adjustable rollers, up to 3/4" in (3) settings, for iCombi 6-full size on 10-full size
12. One (1) Model 60.75.774 Heat Shield, for right side panel, type 10-full size Pro/Classic
13. Five (5) Model 6010.2101 Gastronorm Grid Shelf, 2/1 size, 25-5/8" x 20-7/8", stainless steel
14. One (1) Model 60.72.107 Starter Package, includes: (1) grill and pizza tray, (2) baking trays, & (2) granite-enameled containers
15. One (1) Model 60.72.108 Grill Package, includes: (2) grill and pizza trays & (2) diamond and grill grates
16. Five (5) Model 6015.1103 Gastronorm Perforated Baking Tray, 1/1 size, 12-3/4" x 20-7/8", aluminum with TriLax® coating
17. Five (5) Model 60.73.314 Diamond & Grill Plate, 1/1 GN
18. Five (5) Model 60.73.286 Roasting/Baking Pan, "small set", steel carrier plate (1/1 GN) with 4 pans (diameter 6-1/4"), TriLax® coating
19. Five (5) Model 60.73.287 Roasting/Baking Pan, "large set", steel carrier plate (1/1 GN) with 2 pans (diameter 10"), TriLax® coating
20. Five (5) Model 6019.1250 CombiFry Basket, 1/2 GN, 12" x 10"
21. One (1) Model 20.02.553P Door Gasket, for iCombi 10-full size Classic/Pro
22. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
23. Water Supply to have shut-off valve and back flow preventer furnished and installed by plumbing contractor.

24. Water supply to be hard copper tubing from water filter system. Do not direct connect without filter system.
25. Floor Sink to be located in steam free zone - not below combi oven.
26. Electrical contractor to provide shunt trip breaker.
27. FSEC to verify gas type
28. FSEC required to schedule and provide equipment training with documentation having owner/operator present.
29. Owner/Operator to be signed up with manufacturer's update notification service and instructed how to receive and update software when it is made available.

ITEM # K115.2 WATER FILTER SYSTEM, COMBI
Quantity: One (1)
Manufacturer: RATIONAL
Model: 1900.1150US

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1900.1150US Water Filtration Double Cartridge System, for Combi-Duo models 62/62 or 62/102 or if used for more than 2 units includes: (1) double head with pressure gauge, (2) R95H filter & (1) filter installation kit (for each additional unit add (1) additional head & additional cartridge. Maximum (4) cartridges)
2. One (1) The Rational Water Filtration Systems helps provide consistent high-quality water to your RATIONAL SelfCooking Center or your CombiMaster Plus. The patented carbon block technology reduces the effects of sediment, chloramines and chlorine while providing the required flow rates
3. One (1) All public water systems using surface water and most ground water systems treat with either chlorine/chloramine or chlorine dioxide (EPA will allow levels as high as 4ppm safe for drinking water, exceeding our maximum level of .2ppm.
4. One (1) Chloride concentrations above 80ppm can cause corrosion. RATIONAL Water Filtration does NOT reduce chloride
5. One (1) Model 9999.2271 RCI RATIONAL Certified Installation
6. Two (2) Model 1900.1155US Water Filtration Cartridge, replacement or add on with additional Modular Head to Double Cartridge System, includes: (1) R95HF filter
7. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
8. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
9. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
10. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
11. Install filter as per elevations on food service drawings.
12. FSEC to provide a sticker and date of installation on filter cartridges.
13. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
14. For more information see filter installation detail MEP-101.

ITEM # K116 HD RANGE, 36", 6 OPEN BURNERS
Quantity: One (1)
Manufacturer: Vulcan
Model: V6B36C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model V6B36C V Series Heavy Duty Range, gas, 36", (6) 35,000 BTU open burners, cast iron grates, convection oven, stainless steel front, front top ledge, sides, base, burner box & stub back, 6" adjustable legs, 242,000 BTU, CSA, NSF
2. One (1) 1-year limited parts & labor warranty, standard
3. One (1) Natural gas
4. One (1) Model PRESREG-NA11/4 1-1/4" NPT pressure regulator
5. One (1) 1-1/4" rear gas connection, standard
6. One (1) Rear gas connection: cap & cover, both ends
7. One (1) 115v/60/1-ph, 4.0-amp, fan motor voltage, cord & plug, standard
8. One (1) Model V36DD double-deck hi-shelf riser, non-overlapping, 36"
9. One (1) Model CASTERS RR4 Casters (set of 4)
10. One (1) Dormont Model 16125KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 1-1/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, coiled restraining cable with hardware, 541,000 BTU/hr. minimum, limited lifetime warranty
11. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
12. FSEC to verify gas type.

ITEM # K117 TILTING SKILLET BRAISING PAN, GAS
Quantity: One (1)
Manufacturer: Cleveland Range
Model: SGL30T1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SGL30T1 PowerPan™ Tilting Skillet, gas, 30-gallon capacity, bead blasted cooking surface, 10° tilt cooking feature, with easy manual hand tilt, spring-assisted cover with vent, gallon & liter markings, stainless steel construction with open leg frame, CE, NSF, 125,000 BTU
2. One (1) 1-year parts & labor warranty, standard
3. One (1) Performance start-up included at customer request after equipment is installed
4. One (1) Natural Gas
5. One (1) 120v/60/1-ph, 1.4 amps, NEMA 5-15P, standard
6. One (1) Model PT2 Power Tilt, with hand tilt override
7. One (1) Model TD2SK 2" tangent draw-off valve, front mounted left side, includes FSSK strainer
8. One (1) Model DRAINPAN6 Drainpan Assembly includes: 12" x 20" x 6" deep stainless-steel pan with elbow, 8' x 2" hose & hose clamp (pan carrier sold separately)
9. One (1) Model DPK13 Double Pantry Faucet, with 3/4" swing spout & mounting bracket, for T1 skillets, mounts on right side of unit (add 4.5" to width) (for SEL/SGL models)
10. One (1) Model VS Vegetable Steamer (includes 4" perforated pan), per pan
11. One (1) Model FSSK Food Strainer, 30 & 40 gallon, for braising pans, standard
12. One (1) Model CS-T1 Casters Set, 2 locking, 2 swivel
13. One (1) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
14. One (1) Dormont Model PS (PS) Dormont Safety-Set, equipment placement system for all caster-mounted equipment, allows precise, consistent equipment placement under the fire suppression and ventilation systems, satisfies NFPA codes 17A (5.6.4) and 96 (12.1.2.3), includes two (2) units and hardware pack
15. FSEC to ensure location and pour path is appropriate for floor trough and coordinate.
16. FSEC to verify gas type

ITEM # K118 KETTLE CABINET ASSEMBLY, GAS
Quantity: One (1)
Manufacturer: Cleveland Range
Model: 36GMK1010300

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 36GMK1010300 Kettle/Cabinet Assembly, gas, 36" W cabinet base, with two 10-gallon kettles, standard height baineit with 300,000 BTU gas boiler, includes lift-off cover, double pantry faucet, sink & drain, splash guard, factory installed steam control kit(s)
2. One (1) 1-year parts & labor warranty, standard
3. One (1) 5-year pro-rated parts warranty on boilers & steam generators
4. One (1) Performance start-up included at customer request after equipment is installed (Free Water Quality Check included) (contact Cleveland Sales Representative for details)
5. One (1) Natural Gas
6. One (1) Model DISSOLVE (PN 106174) Descaling Solution, (6) one-gallon containers with quart markings
7. One (1) Dormont Model 1675KIT48 Dormont Blue Hose™ Moveable Gas Connector Kit, 3/4" inside dia., 48" long, covered with stainless steel braid, coated with blue antimicrobial PVC, (1) SnapFast® QD, (1) full port valve, (2) 90° elbows, (1) Snap'N Go, coiled restraining cable with hardware, 180,000 BTU/hr. minimum flow capacity, limited lifetime warranty
8. FSEC to ensure location and pour path is appropriate for floor trough and coordinate.
9. FSEC to verify gas type

ITEM # K119 MOBILE HEATED CABINET
Quantity: Two (2)
Manufacturer: Metro
Model: C589-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model C589-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet, mobile, full height, insulated, universal wire slides (18) 18" x 26" or (34) 12" x 20" x 2-1/2" pan capacity, solid doors, top mount digital control, low temp alarm & memory recall, ducted heating system, thermostat 70° to 200°F temp, 1-1/2" adjustable wire slides, 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, ENERGY STAR®
2. Two (2) 1 year warranty against manufacturing defects
3. Two (2) Right hand hinging, standard
4. Two (2) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. Two (2) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series

ITEM # K120 MOBILE HEATED CABINET
Quantity: Two (2)
Manufacturer: Metro
Model: C589-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model C589-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet, mobile, full height, insulated, universal wire slides (18) 18" x 26" or (34) 12" x 20" x 2-1/2" pan capacity, solid doors, top mount digital control, low temp alarm & memory recall, ducted heating system, thermostat 70° to 200°F temp, 1-1/2" adjustable wire slides, 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, ENERGY STAR®
2. Two (2) 1 year warranty against manufacturing defects
3. Two (2) Right hand hinging, standard
4. Two (2) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. Two (2) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series

ITEM # K121 SPARE NO.

ITEM # K122 SPARE NO.

ITEM # K123 SPARE NO.

ITEM # K124 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T36108SEM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T36108SEM Spec-Master® Marine Series Worktable, 108"W x 36"D, 14/300 series stainless steel top, box marine edge on all sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (6) stainless steel legs & adjustable bullet feet, NSF
2. Where top abuts any walls, provide side splash.

ITEM # K124.1 DRAWER
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle

ITEM # K124.2 DUPLEX CONVENIENCE RECEPTACLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: E18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E18 Duplex receptacle & mounting plate (under table)

ITEM # K124.3 OVERSHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: DOS12108-16/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DOS12108-16/3 Overshelf, table mount, 108"W x 12"D x 30"H, double deck, rolled edge on front & rear, turned down sides, 12"H shelf spacing, all-welded 16/304 stainless steel construction, 1" diameter stainless steel tubular base legs, shipped assembled, NSF

ITEM # K125 SPARE NO.

ITEM # K126 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T36108STEM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T36108STEM Spec-Master® Marine Series Worktable, 108"W x 36"D, 14/300 series stainless steel top, box marine edge on all sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (6) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #K126.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # K126.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # K126.2 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K126.3 DRAWER
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle

ITEM # K126.4 DUPLEX CONVENIENCE RECEPTACLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: E18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E18 Duplex receptacle & mounting plate (under table)

ITEM # K127 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3672STEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3672STEM-BS Spec-Master® Marine Series Worktable, 72"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, Uni-Lok® gusset system, stainless steel crossrails on side & rear, (4) stainless steel legs & adjustable bullet feet, NSF
2. Where top abuts any walls, provide side splash.

ITEM # K127.1 SHELVING, WALL MOUNTED
Quantity: One (1)
Manufacturer: Eagle Group
Model: SWS1572-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SWS1572-14/3 Snap-n-Slide® Shelf, wall-mounted, 72"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 270 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K127.2 DRAWER
Quantity: Two (2)
Manufacturer: Eagle Group
Model: 502946

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 502946 Drawer Assembly, 20" x 20" x 5", 430 type stainless steel housing & frame, removable drawer pan, NSF approved removable slides, hemmed safety pull handle

ITEM # K128 PLANETARY MIXER
Quantity: One (1)
Manufacturer: KitchenAid Commercial
Model: KSMC895DP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KSMC895DP KitchenAid® Commercial Stand Mixer, with bowl guard, countertop, 8-quart bowl with lift, PowerCore® technology, commercial attachment power hub, ASF control panel, stainless steel bowl & guard, dough hook, flat beater, and wire whip, speed control protection, dark pewter finish, 500 watts, 1.3 HP, 120v/60/1-ph, 4' cord, cULus, NSF
2. One (1) Two-year replacement warranty from date of purchase, extends to the purchaser and any succeeding owner Commercial Immersion Blenders operated in the 50 United States, the District of Columbia, & Canada, standard
3. One (1) Model KSMC8QBOWL KitchenAid® Mixer Bowl, 8-quart capacity, with "J" style handle, polished stainless steel, NSF
4. One (1) Model KSMC7QDH Spiral Dough Hook, 7- and 8-quart, stainless steel, NSF
5. One (1) Model KSMC7QEW Elliptical Wire Whip, 7- and 8-quart, stainless steel, NSF
6. One (1) Model KSMC7QFB Flat Beater, 7- and 8-quart, stainless steel, NSF

ITEM # K129 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K129.1
9. Owner to provide towel & soap dispenser.

ITEM # K129.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K130 TWO (2) COMPARTMENT SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: FN2032-2-36-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FN2032-2-36-14/3 Spec-Master® FN Series Sink, two compartment, 108"W x 27"D, 14/304 stainless steel top, coved corners, 16" wide x 20" front-to-back x 14" deep compartments, 36" drainboards on left & right, 9-1/2"H backsplash with 1" upturn & tile edge, 8" OC splash mount faucet holes, rolled edges on front & sides, includes 3-1/2" basket drains, stainless steel crossbracing on all sides, stainless steel legs & adjustable bullet feet, NSF
2. Vendor to provide Chemical Sanitizing Agent System (Pre-Wash, Rinse, Sanitize). Sinks should be clearly labeled showing water lines and cleaning stage.
3. Where top abuts any walls, provide side splash.

ITEM # K130.1 SHELVING, WALL MOUNTED
Quantity: Four (4)
Manufacturer: Eagle Group
Model: SWS1536-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model SWS1536-14/3 Snap-n-Slide® Shelf, wall-mounted, 36"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 135 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Four (4) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K130.2 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK Pre-Rinse Unit, 8" wall mount mixing faucet, quarter-turn cerama cartridges with check valves, lever handles, 18" riser, 44" flexible stainless-steel hose, 1.07 GPM spray valve, 6" wall bracket, vacuum breaker (B-090-FEZ), 1/2" NPT male inlets, installation kit, low lead, cCSAus
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K130.3 DRAIN, LEVER / TWIST WASTE
Quantity: Two (2)
Manufacturer: T&S Brass
Model: B-3940

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model B-3940 Waste Valve, twist handle, 3" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # K131 FOOD PROCESSOR, BENCHTOP / COUNTERTOP
Quantity: One (1)
Manufacturer: Robot Coupe
Model: R502N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model R502N Combination Food Processor, 5.5-liter stainless steel bowl with handle, continuous feed kit with kidney shaped & cylindrical shaped hoppers, includes: (1) "S" blade (27120), (1) 3mm grating disc (28058), (1) 3mm slicing disc (28064), two speeds, 850 & 1725 RPM, 208-240v/60/3-ph, 2.6/2.8 amps, 3 HP, NEMA L15-20P, cETLus, ETL-Sanitation
2. One (1) 1-year parts & labor warranty
3. One (1) Model LP5DISC LP5Disc, (5) disc package includes: (1) 3/16" grating disc, (1) 1/4" x 1/4" julienne disc, (1) 3/16" slicing disc and (1) 3/8" x 3/8" dicing kit (contains two discs)

ITEM # K132 SPARE NO.

ITEM # K133 SPARE NO.

ITEM # K134 MOBILE HEATED CABINET
Quantity: Two (2)
Manufacturer: Metro
Model: C589-SFS-UA

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model C589-SFS-UA C5™ 8 Series Controlled Temperature Holding Cabinet, mobile, full height, insulated, universal wire slides (18) 18" x 26" or (34) 12" x 20" x 2-1/2" pan capacity, solid doors, top mount digital control, low temp alarm & memory recall, ducted heating system, thermostat 70° to 200°F temp, 1-1/2" adjustable wire slides, 5" casters, 304 stainless steel, 120v/60/1-ph, 2000 watts, 16.7 amps, NEMA 5-20P, cULus, NSF, ENERGY STAR®
2. Two (2) 1 year warranty against manufacturing defects
3. Two (2) Right hand hinging, standard
4. Two (2) Model C5-LATCHFLUSH C5 Flush Latch Handle
5. Two (2) Model C5-BUMPDRIP Corner Bumper/Drip Trough, for 8 series, 6 series

ITEM # K135 SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP48HC-12

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP48HC-12 UltraSpec™ Series Sandwich Prep Table, two-section, 48"W, self-contained, 13.0 cubic feet capacity, (2) self-closing doors, (4) epoxy coated shelves, stainless top with opening for (12) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/6 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.2 amps, cord, NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # K136 REACH-IN UNDERCOUNTER FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUF48HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUF48HC Undercounter Freezer, two-section, 48"W, rear mounted self-contained refrigeration, 11.04 cubic feet capacity, (2) self-closing doors, (4) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/2 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 7.0 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. Two (2) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # K137 SPARE NO.

ITEM # K138 WORKTABLE, STAINLESS STEEL TOP
Quantity: One (1)
Manufacturer: Eagle Group
Model: T3672SEM-BS

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model T3672SEM-BS Spec-Master® Marine Series Worktable, 72"W x 36"D, 4-1/2"H backsplash, 14/300 series stainless steel top, box marine edge on front & sides, adjustable 18/300 series stainless steel undershelf with marine edge, Uni-Lok® gusset system, (4) stainless steel legs & adjustable bullet feet, NSF
2. Provide provisions for item #K138.1, sink, plumbing.
3. Where top abuts any walls, provide side splash.

ITEM # K138.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E20

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E20 Sink, 10" x 14" x 9-1/2" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # K138.2 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K139 ROLL-IN FREEZER
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: FIS-1D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FIS-1D-S1-HC UltraSpec™ Series Freezer, Roll-in, one-section, self-contained refrigeration, 34.86 cu. ft. capacity, stainless exterior & interior, standard depth cabinet, (1) full height 20-gauge stainless steel door, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2-year warranty, stainless steel breakers, stainless steel ramp, 3/4 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 9.1 amps, cord with NEMA 5-15P
6. One (1) Door hinging: on left at factory

ITEM # K139.1 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: AXD1818

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model AXD1818 Bun Pan Rack, LifeTime Tough, EXTRA Heavy-Duty Series, 22"W x 26"D x 64"H, Aluminum Construction, End Load, 3" Angle Spacing, (18) 18" x 26" or (36) 13" x 18" pans (2 per shelf), 5" x 2" Heavy-Duty Swivel Plate Casters w/ Zerk Grease Fitting model # CPS25U, Made in USA, NSF
2. One (1) Lifetime warranty for traditional foodservice applications
3. One (1) Model /015 Pan Stop, web-strap
4. One (1) Model /5B Caster Brakes, heavy duty (set of 2)
5. FSEC to verify that racks will fit roll-in (item number #K139) properly.

ITEM # K140 COOKING SUITE H FRAME
Quantity: One (1)
Manufacturer: Vulcan
Model: SUITE C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SUITE C CUSTOM V-SERIES RANGE SUITE (waldorf style) 168" X 84" O.A. with a fabrication lead time of 4-6 weeks (42-56 days) after we receive approved drawings, verified information and all cooking equipment in our shop.
Price includes receiving your cooking equipment, uncrate and assemble in our shop.
Disassemble range suite, palletize, shrink wrap and load for shipping. Freight not included.
The range suite is to include the following custom options and or components:
 - * 12-ga. s/s Top with 2" nose, mitered corners, raised heat bridge, perforated removable grates and bolted "knuckle joint" seams (not one-piece top).
 - * (1) Prep and deliver cabinet body parts to powder coat company. Powder coating by Vulcan.
 - * (1) Custom end cabinet with fixed open shelving, center access to utilities.
 - * (1) Custom end cabinet to incorporate Wells TM90 top mount hot food well with T&S filler faucet.
 - * (1) Custom double over shelf to incorporate 3 Hatco GRA type strip heaters, controls mounted on heat lamps.
 - * (1) VRBS-54" self-contained refrigerated equipment stand base built integral to suite. Food pans by others.
 - * (1) Incorporate pass thru cheesemelter. (by others).
 - * (1) Incorporate 2-Traulsen refrigerators (by others).
 - * S/S tubular double over shelf, 4 pedestal supports removable racks.
 - * (1) 14-gauge s/s type 304 charbroiler cap welded and polished.
 - * (1) 14-gauge s/s type 304 charbroiler splash guard.
 - * (1) 14-gauge s/s type 304 fryer top and flue cover welded and polished, 18 gauge s/s vented fryer cap.
 - * (1) 14 gauge s/s type 304 fryer splash guard.
 - * (1) Pre-wire 10 circuits to junction box.
 - * Electric test in our shop by independent testing company.
 - * Pre-pipe inter gas connections from two 1.25" range front manifold (provided by Vulcan) to shut off valve to accessible point. All fittings to be pre-fit and doped where possible as a courtesy to the plumber only. CSD / Vulcan Hart assume no responsibility for the final gas connections. All joints, fittings and unions should be checked and tested before firing equipment and or before use.

- V-Series custom range suite with a total lead time of 10-12 weeks for equipment fabrication, custom fabrication and delivery to site, after receiving approved drawings and verified information.
2. One (1) SUPERVISE ASSEMBLY, to include one person to supervise the installation team and make suggestions if needed. All labor, tools, equipment and supplies are to be provided by others. Others to offload truck or trailer and move equipment into assembly area before we arrive on the site. Our quotation is based on the following conditions: There must be a KEC representative on site to answer customer/sub questions and coordinate the site. It is the sole responsibility of the installation team to correctly assemble the range suite and to get it done in the period of time we are on the job site. C.S.D. / Vulcan assumes no responsibility whatsoever if our installation option is not purchased. Supervision of the assembly does not imply any guarantee for the assembly. There must be licensed plumber, refrigeration mechanic and electrician (if applicable) on site with tools and supplies to promptly and expediently make interconnections, leak tests and final connections (provided and coordinated by others) during the installation period. We are Non-Union & Non Wage Scale. Union negotiations and clearances must be arranged in advance by the KEC or Vulcan Hart. We will be on site two (2) days (16 hrs.), with travel on Monday and normally arriving on Tuesday morning. No week end stay over unless specifically noted in this quotation. Price based on a three week minimum advanced air fare ticket purchase. No return trips.
 3. Custom cooking suite size and shape as shown on drawing – Refer to Spec Drawing Sheet QF-X650. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below:

Heavy-duty range top and base components must be modular construction with post-installation change out capability.

4. **ADDITIONAL FEATURES & OPTIONS:**
CUSTOM V-SERIES RANGE SUITE (Waldorf style) with a fabrication includes design drawings, CAD and Revit files.
Fully welded heavy gauge stainless steel construction.
Whole unit assembly to be NSF and UL listed.
Fully constructed and tested at the factory prior to shipment.
Free new equipment performance check-out to be provided by Vulcan factory direct service technician after unit installation.
Warranty: 5-years custom suite fabrication, to be obtained by either a Factory Direct or Authorized Independent Service Technician.
12-gauge S/S Top with 2" nose, mitered corners, raised heat bridge, perforated removable grates and bolted "knuckle joint" seams.
Custom cabinet with access to utilities.
Custom heavy gauge 304 S/S tubular overshelf/overshelves, with pedestal supports and removable racks.
Strong Counter-Weighted Door.
Standard porcelain coated steel ovens, non-stick and easy to clean.
5. **UTILITIES:**
GAS:
Pre-pipe inter gas connections from two 1.25" range front manifold to shut off valve to accessible point. All fittings to be pre-fit and doped where possible as a courtesy to the plumber only. CSD / Vulcan Hart assume no responsibility for the final gas connections. All joints, fittings and unions should be checked and tested before firing equipment and or before use.
ELECTRICAL:
All electrical wires, conduit and pig tails are provided by Vulcan to a single point electrical connection with main load panel by Vulcan, final connections by Electrical Contractor from stub up location to load panel. GFI convenience duplex outlets are specified and noted on drawings – to be provided by Vulcan interconnected and pre-wired to load center in factory.

PLUMBING:

All water connections to be internally run to a single point connection. Connection from service panel to stub up by plumbing contractor. Drain connection to the appropriate floor sink/drain are to be extended by plumbing contractor.

6. **COORDINATION / INSTALLATION REQUIREMENTS:**

Vulcan shop drawings must be submitted for review and approval prior to fabrication.

Refer to Spec Drawing Sheet QF-X650.

Foodservice Equipment Dealer to coordinate building access and determine sectional delivery method to fit into building openings and assemble cooking suite in space.

Foodservice Equipment Dealer to coordinate stub-up connection points for plumbing, electric and water supply to line up with cooking suite utility access panels and provide dimensioned rough-in drawings.

VULCAN TO SUPERVISE INSTALLATION AND ASSEMBLY, to include one person to supervise the installation team and make suggestions if needed. Others to offload truck or trailer and move equipment into assembly area before we arrive on the site.

All built-in, drop-in, and slide-in equipment items shall be coordinated and installed with direct factory supervision.

Substitutions will not be accepted for this item.

7. **FINISH:**

Stainless Steel

8. **COOKING SUITE MODULES:**

Listed as sub-items #K140.1 - #K104.10

ITEM # K140.1 HOT FOOD WELL UNIT, DROP-IN, ELECTRIC, Included
Quantity: One (1)
Manufacturer: Wells
Model: MOD-100TD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model MOD-100TD Food Warmer, top-mount, drop-in, electric, (1) 12" x 20" opening with drain, wet/dry operation, thermostatic controls, 5-7/8" x 6-1/4" control panel, stainless steel interior, insulated aluminized steel housing, NSF, UL
2. One (1) Limited 2-year parts & 1 year labor warranty, standard
3. One (1) 120v/60/1-ph, 1.65 kW
4. One (1) Model 21709 Drain Screen, one per well
5. One (1) Model 20774 Round Inset, 4 quart, with lid, fits 6-1/2" opening
6. One (1) Model 20587 Round Inset, 7 quart, with lid, fits 8-1/2" opening
7. One (1) Model 20908 Round Inset, 11 quart, with handles & slotted lid, fits 10-1/2" opening
8. One (1) Model 21057 Round Inset, 11 quart, fits 10-1/2" opening, with hinged lid, no handles
9. One (1) Model 21860 Soup Ladle, 8 oz., 15-1/8" overall length, 1-piece stainless steel construction
10. Included in Suite item #K140.

ITEM # K140.2 PANTRY FAUCET, Included
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0208

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0208 Pantry Faucet, single with 6" cast nozzle, deck mounted, shank aerator outlet with 1/2" NPS thread, 1/4" IPS union type tailpiece, lever handle, "C" (or "H"), quarter-turn Eterna cartridge, low lead, ADA Compliant
2. Included in Suite item #T101.

ITEM # K140.3 HD RANGE, 36", 6 OPEN BURNERS
Quantity: Two (2)
Manufacturer: Vulcan
Model: V6B36C

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model V6B36C V Series Heavy Duty Range, gas, 36", (6) 35,000 BTU open burners, cast iron grates, convection oven, stainless steel front, front top ledge, sides, base, burner box & stub back, 6" adjustable legs, 242,000 BTU, CSA, NSF
2. Two (2) 1-year limited parts & labor warranty, standard
3. Two (2) Natural gas
4. Two (2) Model PRESREG-NA11/4 1-1/4" NPT pressure regulator (Natural gas)
5. Two (2) 1-1/4" rear gas connection, standard
6. Two (2) Rear gas connection: cap & cover, both ends
7. Two (2) 115v/60/1-ph, 4.0-amp, fan motor voltage, cord & plug, standard
8. Six (6) Model SGRATE-VRNG "S" grate, in lieu of standard open burner grate, per 12" section

ITEM # K140.4 HD RANGE, 36", 2 PLANCHAS
Quantity: One (1)
Manufacturer: Vulcan
Model: V2P36

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model V2P36 V Series Heavy Duty Range, gas, 36", modular, (2) planchas, 1/2" polished steel plate, stainless steel front, front top ledge, sides, base, burner box & 4" stub back, 4" flanged feet, 35,000 BTU, CSA, NSF
2. One (1) 1-year limited parts & labor warranty, standard
3. One (1) Natural gas
4. One (1) Model PRESREG-NA11/4 1-1/4" NPT pressure regulator
5. One (1) 1-1/4" rear gas connection, standard
6. One (1) Rear gas connection: cap & cover, both ends

ITEM # K140.5 REFRIGERATED BASE
Quantity: One (1)
Manufacturer: Vulcan
Model: VRBS54

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VRBS54 Custom 54" Refrigerated Base, Self-Contained.
Included in Full Suite, Item #K140.

ITEM # K140.6 HEAT LAMP, Included
Quantity: Two (2)
Manufacturer: Hatco
Model: GRAH-36

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model GRAH-36 Glo-Ray® Infrared Foodwarmer, 36" W, high wattage, tubular metal heater rod, single heater rod housing, aluminum construction, 800 watts, NSF, cULus, Made in USA
2. Two (2) Includes 24/7 parts & service assistance
3. Two (2) One-year on-site parts & labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. Two (2) 120v/60/1-ph
5. Two (2) Model BLT TOG-1 (1) Built-in toggle control
6. Two (2) Model STANDARD Clear Anodized Aluminum housing, finish, standard
7. Included in Suite item #K140.

ITEM # K140.7 GAS FLOOR FRYER
Quantity: One (1)
Manufacturer: Vulcan
Model: VFRY18

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VFRY18 V Series Heavy Duty Range Match Fryer, gas, 18", 45-50 lb. fat capacity, electronic ignition, 3/4" regulator, stainless steel exterior finish, 6" adjustable legs, 70,000 BTU, CSA, NSF
2. One (1) 1-year limited parts & labor, 5-year limited fry tank warranty, standard
3. One (1) Natural gas
4. One (1) Control voltage: 120v/60/1-ph, NEMA 5-15P, standard
5. One (1) 3/4" rear gas connection, standard
6. One (1) Rear gas connection: cap & cover, both ends
7. One (1) Model BASKETS-TWINRD Set of Twin Baskets, for all 35, 45 & 50 lb. fryers
8. One (1) Model COVER-TANK Stainless steel tank cover/work surface top, for all 35 & 45 lb. gas fryers & Frymate VX15

ITEM # K140.8 HD RANGE, 36", CHARBROILER
Quantity: One (1)
Manufacturer: Vulcan
Model: VCBB36B

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VCBB36B V Series Heavy Duty Range, gas, 36", charbroiler, cast iron grates & radiants, cabinet base, stainless steel front, front top ledge, side, base, burner box & stub back, 6" adjustable legs, 99,000 BTU, CSA, NSF
2. One (1) 1-year limited parts & labor warranty, standard
3. One (1) Natural gas (specify elevation if over 2,000 ft.)
4. One (1) NOTE: A regulator must be used on this equipment
5. One (1) 3/4" rear gas connection, standard
6. One (1) Rear gas connection: cap & cover, both ends

ITEM # K140.9 COMPACT PREP TABLE REFRIGERATOR
Quantity: Two (2)
Manufacturer: Traulsen
Model: UST3212-L

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model UST3212-L Dealer's Choice Compact Prep Table Refrigerator with low-profile flat cover, Reach-in, one-section, 32" wide, holds (12) 1/6 pans 4" deep (included), can accommodate up to 6" deep pans, stainless steel exterior top, sides & door with Santoprene® EZ-Clean Gasket, hinged left, anodized aluminum interior, galvanized exterior back and bottom, rear mounted, self-contained refrigeration, (4) 4" casters, 1/4 HP, cETLus, NSF
2. Two (2) 3-year parts & labor and 5-year compressor warranty, standard
3. Two (2) 115v/60/1-ph, 7.5 amps, 8' cord, NEMA 5-15P
4. Two (2) Model SHELF CPW2 Additional Powder Coated Shelf, for 32" wide models

ITEM # K140.10 CHEESEMELTER, GAS
Quantity: One (1)
Manufacturer: Rankin-Delux
Model: RDCM-36-C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RDCM-36-C ****PROVIDED BY OTHERS and SUPPLIED TO US FOR INSTALLATION****
 Contact Royal Range of California for details.

ITEM # K141-B &K141-F EXHAUST HOOD

Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. **CONSTRUCTION:**
Ventilators to be constructed of #18-gauge, type 304 stainless-steel. Ventilators to have an all-welded exterior, ground and polished. Ventilators are ETL Listed to UL Standards, ETL Sanitation Listed, and built-in compliance with NFPA pamphlet No. 96, BOCA, ICBO and SBCCI
Provide a concealed, full length grease trough, accessible from the top for cleaning, with removable, concealed grease cup on one end.
Provide insulation on all exposed sides (recommended when supply air is below 55° F).
Provide make-up air through a front plenum, installed in ceiling, at front of hood. Make-up air shall consist of duct collars, air volume and fire dampers, plenum, air diffuser baffle and ceiling installed discharge registers. Hood shall be designed and installed to automatically activate exhaust fan(s) whenever cooking operations occur. Activation of exhaust fan(s) shall occur through an interlock with cooking appliances, by means of thermostatic heat sensors or by means of other approved methods.
4. **CONTROLS/SWITCHES:**
FSEC shall provide an EMS – Energy Management System control panel with light and fan switches, wall mounted, in a location near hood and shall be easily accessible and factory pre-wired. Electrical Contractor to interconnect to fire suppression system and fan(s). Location of control panel/switches shall be verified before installation.
Room Temperature Sensor - Room temperature sensor is used to automatically activate fans when temperature in the exhaust duct exceeds 15 degrees Fahrenheit of room temperature.
Mounting and wiring of room temperature sensor to control panel to be done by Electrical Contractor. Two strand 18 AWG thermostat wire provided by Captive-Aire. Room temperature sensor to be field installed in a safe location free of influence from external heat sources. Do not install room temperature sensor on an external wall. Temp sensor to be located between 5-25' distance from hood.
5. **LIGHTS:**
Provide each ventilator with UL listed Component Hardware recessed 4' LED light fixture, #L82-1040-L22N wired to a main junction box. 22 Watts.
6. **DUCTWORK:**
Exhaust and supply duct collars to extend 6 above the finished ceiling for connection to overhead ductwork. Ductwork to be furnished and installed by the HVAC contractor.
Duct collars to be shipped loose for positioning in field and clearing any obstructions allowing flexibility during installation.
7. **FANS:**
Exhaust and supply air system shall be provided with proper air quantities and velocities for proper exhaust extraction and to maintain a balanced condition within the exhaust hood and surrounding building environment. See hood sheets for CFM requirements.
Exhaust and supply fans to be furnished and installed by the HVAC contractor.
8. **FILTERS:**
Furnish easily removable filters. Horizontal baffles to extract and retain grease out of the air stream. Filters to be Stainless Steel High Efficiency Baffle Filter with Handles and Bottom Hanging Hook, UL Classified. Particulate Capture efficiency, 93%, efficient at 9 microns, 74% efficient at 5 microns. NSF approved.

9. **WALL PANELS:**
Furnish and install 22-gauge stainless-steel wall panels extending from the bottom of the rear of the exhaust hood to the upper edge of the baseboard molding and extending along the full length of all wall surfaces (left, right and rear). Wall panel sections shall be joined with stainless steel divider bars to allow panel sections to fit tightly against the wall and to result in watertight seams. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction. Seal end seams with General Electric clear silicone sealer. Wall panels to be insulated if applied to combustible material.
10. **TRIM:**
FSEC to furnish and install 18-gauge s/s enclosures from top of ventilators to the finished ceiling along all exposed sides, both ends and underside above stub wall to enclose spaces. Verify height of enclosure trim in field.
11. **FINISHES:**
Hoods are specified with decorative finish, hood to be provided with 1" insulated standoff with decorative finishes as specified on all exposed sides. This is to provide a 0" clearance rating per hood manufacturer listing. If the intent is to cover the hood with decorative stainless, laminate, or other panels, this material can be applied directly to the hood using adhesive or fasteners under 1" in length. Decorative finish to be supplied and installed by FSEC.
When installing a large or heavier surround such as tile, coordinate a soffit to be dropped around the hood. This will better support the weight of the cement board and tile. Soffit and tile to be provided and installed by GC. Refer to architectural details.
Refer to "EXH-13 - Hood - Decorative Fascia Finish Detail" for additional information.
12. **FIRE PROTECTION SYSTEM:**
Fire Cabinet, to house fire suppression system and hood controls. FSEC to verify which side of hood and ensure cabinet doors clear for opening.
Hood to be pre-piped for Ansul Fire Protection System, Item #K141.2, there should be no field cutting or modifications to hood.
FSEC is responsible for coordinating installation with Fire Protection System, and cooking equipment.
13. **INSTALLATION:**
Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with 1/2" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
14. **COORDINATION:**
FSEC to coordinate final hood design with HVAC engineers and Contractor to ensure adequate space allocation for hood and verification of duct connection points, clearance above hood, etc. If combustible surfaces exist above the hood - provide 3M insulated stainless steel panel installed above hood for clearance compliance to combustible surfaces. Insulated panel to extend 18" past hood on sides and front.
FSEC to verify rough and finish ceiling heights for final hood dimensions and trim requirements. Applicable trades shall connect building rough ins to hood control cabinet and hood and make all necessary interconnections from the control cabinet to the hood and fans.
Structural engineer shall be responsible for reviewing all hood information and shop drawings and providing an appropriate support structure.

15. **SYSTEM DESIGN VERIFICATION (NOT OPTIONAL):**

After completion of the hood installation and utility connections by site trades, Food Service Equipment Contractor shall secure CAS - "Captive Air Systems" Service to perform a System Design Verification (SDV). The SDV will be performed after all inspections are complete. Any field related discrepancies that are discovered during the SDV will be brought to the attention of Food Service Equipment Contractor, General Contractor, and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer at no cost. If CAS Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by CAS Services or direct respective trades to remedy those issues.

ITEM # K141.1	HOOD CONTROLS
Quantity:	One (1)
Manufacturer:	Captive-Aire
Model:	CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Hood Controls
2. **HOOD CONTROL PANEL**
MANUFACTURER: CAPTIVE-AIRE
MODEL: DCV-I 1 1 1
3. **FEATURES:**
DCV-1111 Demand Control Ventilation, w/ 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY THREE PHASE MOTOR REQUIRED to be sized by MEP engineers and provided by mechanical engineer. Room temperature sensor shipped loose for field installation. Dealer to verify distance between VFD and Motor and provide appropriate length.
Control package Includes 4 Duct Thermostat kits. – ESV371N02YXBS71 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS – ESV371N02YXB571 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA I Enclosure, with 2RJ-45 FOR MODBUS – 20 wide XI 8 tall X8.62 deep SS HINGED ELECTRICAL BOX NEMA I – VENTED. Install out of site/view from front of the house and in a recessed wall when possible. Do Not block ventilation ports and provide clearance around the enclosure.
Digital Prewire Lighting Relay Kit. Includes hood lighting relay & terminal blocks. Allows for up to 1400W of lighting each. – Thermistor CABLE – 18/2 AWG GREEN WHITE, plenum rated. USED for thermistor duct stat.
4. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each control package and additional construction information.

ITEM # K141.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by the Food Service Equipment Contractor and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork, and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests, and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless-steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by the FSEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch (4 micro switches furnished and installed by the FSEC) to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Electric Gas shut-off valve to be furnished by the FSEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. Gas shut off valve installation to be visible and accessible
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # K141.3 FIRE PULL STATION, WALL MOUNT
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Pull Station, Wall Mount
2. Included in Fire Suppression System item #K141.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # K141.4 FIRE EXTINGUISHER
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Extinguisher
2. Included with Fire Suppression System item #K141.2
3. Provide K-Guard fire extinguisher and mount on wall at 48" AFF.
4. The K-GUARD fire extinguisher is to be constructed of high-quality materials, including a stainless-steel shell, tube, and strainer, and to have an effective discharge range of approximately 10 feet (3.1 m). To feature a "universal" hose and nozzle configuration, along with a valve and tube assembly, for easy maintenance. The extinguisher to contain 1.6 gallons (6 L) of ANSULEX Low pH agent which is gentler on stainless steel appliances and is approved for operation in environments with temperatures from -20 °F to 120 °F (-29 °C to 49 °C). Additionally, bi-lingual pictogram nameplates and bold caution statements help to ensure employees understand how to operate the extinguisher in a fire emergency. The K-GUARD extinguisher is to be warranted for six years from date of delivery to the original end-user purchaser.
5. G.C. to provide blocking in wall.

ITEM # K142 CHEF'S COUNTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Chef's Counter
2. Provide provisions for item #K142.4, sink, plumbing.
3. Custom Chefs Counter size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
4. Top shall be fabricated of #14-gauge stainless steel with all edges turned down 2" with 1/2" return. Underside of top shall be reinforced with #14-gauge stainless steel channels. Top shall be of one-piece construction having all corners rounded and have cut-outs to receive all countertop equipment shown on drawing. Field joints shall be kept to a minimum with all traces of welding removed.
5. Top shall be mounted on 1-1/2" x 1-1/2" welded stainless steel framework. Front ends and back of base shall be enclosed with #16-gauge stainless steel panels having all exposed joints continuously welded, ground, and polished. Base to be supported on stainless steel legs with adjustable stainless steel bullet feet. Legs shall have a 6" high #16-gauge s/s removable kickplate on all sides.
6. Where drop-in pans are installed in the countertop (hot or cold), provide a recess to allow 18" x 26" pans to set flush with the top.
7. All controls to be installed in aprons.
8. Provide a stainless-steel hinged doors with louvers to allow air circulation at the locations of the refrigerated drop-in pans.
9. Drains are to be manifolded to one end with a ball valve and extended to the nearest acceptable floor drain. Ball valve to be recessed and accessible for operation.
10. Whole unit assembly to be NSF and UL listed.
11. Counter to be integrated with factory pre-wired load center. Stainless-steel fabricator shall interconnect all wiring and receptacles, within counter, to the load center panel, inclusive of all DCR's. All electrical connections and receptacles powering compressor equipment to be interconnected through Pass and Seymour 2084I – 20A GFCI Dead Front to serve as Class A Ground Fault Protection. Do not plug into a standard GFCI as the compressor motor will create an overload spike and trip the GFCI. Standard dual receptacle to be installed adjacent to Pass and Seymour 2084I in a quad box and the receptacle to be wired through Pass and Seymour 2084I. All interconnections to be done in factory. Electrical Contractor shall interconnect between the load center panel, in the counter, and the electrical supply stub-up. FSEC to provide dimensioned rough-in plan showing ground stub-up location.
12. All built in, drop in and slide in equipment items shall be coordinated and installed by FSEC supplier/installer.
13. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.

ITEM # K142.1 TWO TIER COUNTER SHELF
Quantity: Two (2)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model CUSTOM Two Tier Counter Shelf
2. FSEC shall furnish and install as a custom fabricated item, size and configuration as shown on drawings and as described here and in the General Specifications Parts.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.
5. Construct overshelves and single-sided utensil rack (above hot food wells) of #14 GA s/s; shelves to have 1-1/2" turned down edges all sides to conceal heat lamps.
6. Top of bottom shelf to be 18" above countertop; second shelf to be 16" above first shelf.
7. Provide provisions for heat lamps and Install with controls mounted on heat lamps, including infinite controls, pilot lights and on/off switches.
8. Provide Ticket Rail on chef's side of overhead shelf.
9. FSEC to coordinate installation of double overshelves with heat lamps & lights and all other adjacent and associated equipment.
10. Equipment to be NSF listed and labeled.

ITEM # K142.2 HEAT LAMP
Quantity: Two (2)
Manufacturer: Hatco
Model: GRAH-72D3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model GRAH-72D3 Glo-Ray® Infrared Foodwarmer, 72" W, high wattage, tubular metal heater rod, double header rod housing 3" spacing, aluminum construction, 3450 watts, NSF, cULus, Made in USA
2. One (1) Includes 24/7 parts & service assistance
3. Two (2) One-year on-site parts and labor warranty, plus one additional year parts only warranty on all Glo-Ray metal sheathed elements
4. Two (2) 208v/60/1-ph
5. Two (2) Model REM INF 2 (2) Remote infinite control in lieu of standard built-in toggle, shipped loose; max. 12.2 amp each
6. Two (2) Model IND.LGT-2-REM (2) Indicator Lights; Remote only, per circuit - remote control only on all tandem element units
7. Two (2) Model LEADS10 6'-10' Extended Electrical Leads
8. Two (2) Model STANDARD Clear Anodized Aluminum, standard

ITEM # K142.3 TICKET RAIL
Quantity: Six (6)
Manufacturer: Eagle Group
Model: 356902

Furnish and set-in place per manufacturer's standard specifications:

1. Six (6) Model 356902 Ticket Rail, 60"W

ITEM # K142.4 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # K142.5 DECK MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0221-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0221-CR Faucet, cerama cartridges, deck mixing faucet, 12" swing nozzle, quarter-turn Cerama cartridges with check valves, lever handles, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K142.6 INDUCTION SOUP RETHERMALIZER, BUILT-IN / DROP-IN
Quantity: Two (2)
Manufacturer: Vollrath
Model: 741101D

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 741101D Mirage® Induction Rethermalizer, drop-in, dry operation, 11 quart, inset with hinged cover, (4) soup presets, stir indicator LED, solid state controls with locking function, temperature control in °F or °C, cabinet mount controls with leads, includes: induction ready inset, inset cover, mounting hardware & cord with NEMA 5-15P, 800 watts, 6.7 amps, 120v/60/1-ph, cULus, NSF, FCC (cover not NSF)
2. Two (2) Requires use of included Vollrath induction-ready inset - failure to use these insets may damage the unit & will void the warranty
3. Six (6) Model 88204 Inset, 11-quart, induction ready, for Mirage induction rethermalizer, NSF
4. Two (2) Model 4980422 Ergo Grip® Ladle, 4 oz., 3-1/8" bowl dia., 13-1/8"L OAL, equipped with all-natural antimicrobial, 3 oz., stainless steel, 13-1/8" OA length, Kool-Touch™ one-piece black construction offset handle, safe up to 225°F (107.2°C), fully functional to 350°F (176.6°C), integrated handle stopper, Jacob's Pride® Collection, Limited Lifetime Warranty, NSF
5. Two (2) Model 47494 Contemporary Inset Cover, hinged, fits 11-1/4 quart inset, easy on/off lid, welded handle, condensation returns to inset, no friction fit tabs for easy installation & removal, dishwasher safe, stainless steel construction, imported
6. Two (2) Model 47492 Decorative Ring, for 11 qt. induction soup drop-in units, 22-gauge stainless steel
7. FSEC to install soup well into engineered stone countertop utilizing manufacturers approved specifications for heat deflection to avoid cracking of stone. Provide blocking around cut-out and supports to the cabinet base.
8. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
9. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed in a control enclosure Component Hardware model #R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
10. Equipment to be NSF and UL listed and labeled.
11. When located in enclosed cabinet: Ventilation required, Millwork Fabricator to provide McNichols 16-gauge wire mesh framed insert in doors. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting

ITEM # K142.7 HOT / COLD FOOD WELL UNIT, DROP-IN, ELECTRIC
Quantity: One (1)
Manufacturer: Vollrath
Model: FC-6HC-03208-AD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FC-6HC-03208-AD Hot/Cold Well, Drop-In, top mount, (3) pan, remote mountable panel with on-off switch, hot/cold toggle with indicator lights for hot or cold, thermostatic temperature rotary knob control in hot mode, preset cold control, automatic manifold drain, 300 series stainless well & flange, galvanized wrapper, 625 watts per well, 10.2amp, 120/208-240v/60/1-ph, cord with NEMA 14-20P, cULus, NSF, Made in USA
2. One (1) Model 43580-2 Control Panel Mounting Frame
3. Size and locations of cut-outs are to be verified by FSEC and noted on shop drawings.
4. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed. Switch, control enclosure and interconnection by stainless steel fabricator of counter.
5. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
6. FSEC is responsible for coordinating with stainless steel shop drawings and associated equipment, including breath protector.
7. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
8. Drains are to be manifolded to one end with a shut-off ball valve and extended to the nearest acceptable indirect waste floor drain.
9. Drain to be indirect to nearest floor sink, piping, and connection by PC.
10. Owner shall supply pans, bowls, crocks, etc.
11. FSEC to verify quantity and sizes of adapter bars to be used with variety of pans.
12. Equipment to be NSF and UL listed and labeled.

ITEM # K142.8 COLD FOOD WELL UNIT, DROP-IN, REFRIGERATED
Quantity: One (1)
Manufacturer: Vollrath
Model: FC-4C-01120-N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FC-4C-01120-N NSF7 Refrigerated Cold Pan, drop-In, 1-pan, 6-5/8" deep well, accommodates standard 12" x 20" pans with adaptor bars, drip-free flange, polyurethane foam insulated, 300 series stainless steel, 20 gauge galvanized exterior housing, self-contained refrigeration, 1/5 HP, 120v/60/1-ph, cord, NEMA 5-15P, 3.5 amps, cULus, NSF, Made in USA
2. All equipment that is specified to be drop-in or recessed in counter shall be shipped to millwork fabricator for factory installation into counter.
3. Equipment shall be securely fastened to counter with equipment controls easily accessible. On/Off operation of hot/cold well to be by a recessed switch mounted in apron, interconnected to receptacle powering hot/cold well. Switch to be recessed. Switch, control enclosure and interconnection by stainless steel fabricator of counter.
4. Size and location of all cut-outs are to be verified and noted on shop drawings by Kitchen Equipment Contractor.
5. Plumbing Contractor to extend drain line to nearest floor sink.
6. Unit to be furnished with a drain to shut-off valve.
7. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
8. FSEC to coordinate installation of this unit, into countertop, with stainless-steel fabricator.
9. FSEC is responsible for coordinating with stainless steel shop drawings and associated equipment, including breath protector.
10. FSEC is responsible for providing appropriate louvers, panel fans or other means, to address air circulation for equipment with compressors or other heat producing components.
11. Owner shall supply pans, bowls, crocks, etc.
12. FSEC to verify quantity and sizes of adapter bars to be used with variety of pans.
13. Equipment to be NSF and UL listed and labeled.

ITEM # K142.9 WARMING DRAWER, BUILT-IN
Quantity: One (1)
Manufacturer: Alto-Shaam
Model: 500-2D

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 500-2D Halo Heat® Warming Drawer, built-in, two drawer, digital controller, (1) 12" x 20" pan, (50) rolls or (34) baked potatoes capacity per drawer, drawer can adapt to hold optional oversize pan, adjustable thermostat, stainless steel exterior, EcoSmart®, cULus, UL EPH Classified, CE, EAC
2. One (1) 120v/50/60/1-ph, 5.3 amps, .64 kW, NEMA 5-15P, standard
3. One (1) Non-vented drawers, standard
4. One (1) Model 5015149 Built-In Trim Kit, for 500-2D two drawer warmer
5. Stainless-steel fabricator to trim drawer unit for a flush mount finish installation. Unit should not sit on a shelf or floor with surrounding gaps.

ITEM # K142.10 DUAL CONVENIENCE RECEPTACLE
Quantity: Four (4)
Manufacturer: Eagle Group
Model: E18

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model E18 Duplex receptacle & mounting plate (under table)

ITEM # K142.11 REFRIGERATOR/FREEZER PREP WORK SYSTEM
Quantity: One (1)
Manufacturer: Randell
Model: FX-1-290

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model FX-1-290 FX Series Flexible Refrigerator or Freezer Base, 43.3" W, 3.0 cubic feet, single drawer with removable ABS insert, self-contained refrigeration with electronic control (40° refrigerator, -5° freezer), unfinished top, stainless steel interior, front & sides, R290 Hydrocarbon refrigerant, 1/4 HP, UL, cUL, NSF, Made in USA
2. One (1) (1) year parts, labor, and compressor warranty, standard
3. One (1) 115v/60/1-ph, 1.7 amps, NEMA 5-15P, standard
4. One (1) Model FX-FLANGE Flange Kit
5. One (1) Model FX-DRLOCK Drawer Lock, cylinder 1 each, per drawer
6. Unit to be built-in to chef's counter at factory.

ITEM # K142.12 LOAD CENTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Load Center
2. Included with item #K142, Chef's Counter.
3. Entire counter to be pre-wired to a built-in circuit breaker panel. This shall include all outlets, Jboxes, conduit, wiring, electrical components, and accessories attached to, or built into the counter. All conduit, with wiring, shall be concealed from view, and installed in a manner which will not interfere with the intended use of the counter. Panel to include a main breaker for single circuit service connection, and individual breakers for items included in the counter. Panel and electrical components and installation shall comply with the National Electrical Code. Verify and coordinate panel service circuit size, load, phasing, and requirements with the Electrical Engineer's documents, and the Electrical Division.
4. Receptacle and counter provision provided by Eagle Group with table.
5. Electrician to run conduit connection to receptacle and wire to a dedicated 120v, 15a circuit.

ITEM # K143 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: 430S

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 430S Bun Pan Rack, Under-Counter, Stainless Series, 20.5"W x 26"D x 32"H, Stainless Steel Construction, End Load, 3" Angle Spacing, (8) 18" x 26" or (16) 13" x 18" pans (2 per shelf), 5" Swivel Stem Casters model # CSS45PU, Made in USA, NSF
2. One (1) 5-year warranty on parts and 90 days labor, standard
3. One (1) Model /S Solid Top/Work Top, stainless steel
4. One (1) Model /011 Caster Brakes (set of 2)

ITEM # K144 SPARE NO.

ITEM # K145 SANDWICH / SALAD PREPARATION REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VSP60HC-16

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VSP60HC-16 UltraSpec™ Series Sandwich Prep Table, two-section, 60"W, self-contained, 17.1 cubic feet capacity, (2) self-closing doors, (4) epoxy coated shelves, stainless top with opening for (16) 1/6 size pans, 10" composite cutting board, locking divider bars, hinged, insulated flat lift-up lid, full electronic control, stainless steel door, front, & sides, aluminum interior, Santoprene gaskets with 2 year warranty, rear mount refrigeration system, R290 Hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 5.4 amps, cord, NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. One (1) Model 00C30-099A Door Lock
8. One (1) Casters, set of (4), 6" high, (2) with brakes, standard

ITEM # K146 MICROWAVE OVEN
Quantity: One (1)
Manufacturer: ACP
Model: HDC12A2

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HDC12A2 Amana® Commercial Microwave Oven, countertop, stackable, 0.6 cu. ft. capacity, 1200 watts, heavy volume, (2) magnetrons, 4-stage cooking, multiple portion setting, (11) power levels, (100) memory settings, smart USB connectivity, ACP Programming compatible, multi-language operation, 60-minute max cooking time, touchpad controls with LED display, interlock safety switch, audible end of cycle signal, side hinged door with tempered glass, Grab & Go door handle, sealed ceramic interior shelf, lighted interior, stainless steel exterior & interior, 2kW, 120v/60/1-ph, 20.0 amps, cord, NEMA 5-20, cETLus, ETL-Sanitation
2. One (1) 3-year full warranty
3. One (1) Model SB10 Basket, 6" x 12" x 1", non-stick, Teflon, aids in crisping & browning food, (2 per box), suitable for all ACP, Inc. ovens
4. One (1) Model TB10 Basket, non-stick, 10" x 12" x 1", mesh bottom, aids in crisping & browning food, (2 per box), suitable for all ACP Inc. ovens
5. One (1) Model CL10 Amana® Oven Cleaner, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens (shipped in USA Only)
6. One (1) Model SH10 Oven Shield, (6) bottles, (2) sprayers, suitable for all ACP Inc. ovens, (shipped in USA Only)
7. Two (2) Cambro Model 14HP150 H-Pan™ High Heat Hot Food Pan, full size, 4" deep, hi-temp plastic, -40°F to 375°F, non-stick surface, won't bend or dent, amber, NSF
8. Two (2) Cambro Model 10HPCH150 H-Pan™ Food Cover, high heat, full size, flat, with handle, -40°F to 300°F, non-stick surface, won't bend or dent, amber, NSF

ITEM # K147 HEAT LAMP, CORD MOUNTED TO CANOPY
Quantity: Four (4)
Manufacturer: Baselite Corporation
Model: FW14

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model FW14 The Cantina Heat Lamp Pendant, ceiling mount, 9" W x 9" D x 10-1/2" H, bell shade, 120v, 375 watts total, NSF, cULus, MADE IN USA
2. Four (4) 1-year parts, 90 days labor warranty, standard
3. Four (4) 250-watt heat lamp
4. Four (4) Model 250WCC Heat Lamp Bulb, clear, Safety Coated, 250 watts
5. Four (4) Model 62 Anodized Bronze Aluminum Finish
6. Four (4) NOTE: Finish color is the same inside and out
7. Four (4) Cord mounting
8. Four (4) Model BLC Electrical Cord, 6', black
9. Four (4) Model 62 Anodized Bronze Aluminum (canopy/rose finish)
10. Four (4) Model TSR Remote Mounted Switch
11. Four (4) NOTE: 1200 watt maximum - (4) 250-Watt lamps
12. FSEC to be responsible for providing and installing anchors and any other appropriate hardware to support Heat Lamps from ceiling.
13. GC to provide any required blocking above ceiling to properly secure lights
14. FSEC to indicate blocking locations in ceiling if required on blocking sheet of shop drawings.
15. Standard mounting height at 5'-6" AFF placing bottom of heat lamp to be installed 14" above heated surface. Standard cord length is 3'-2", FSEC to verify ceiling height prior to ordering.
16. Electrical Contractor to wire lights to switch mounted on millwork front counter apron. Each lamp to be individually controlled by separate switch.

ITEM # K148 HEATED LOW TEMP HOLDING CABINET
Quantity: One (1)
Manufacturer: Alto-Shaam
Model: 500-S

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 500-S Halo Heat® Low Temp Holding Cabinet, on/off simple controller with adjustable thermostat, indicator light, capacity (6) 12" x 20" pans, (2) chrome plated side racks & wire shelves, heavy-duty stainless-steel exterior, 2-1/2" casters; 2 rigid, 2 swivel with brakes, EcoSmart®, cULus, UL EPH ANSI/NSF 4, CE, IPX3, TUV NORD, EAC, N11942
2. One (1) 120v/60/1-ph, 8.4 amps, 1.0kW, 5 ft. cord, NEMA 5-15P
3. One (1) Solid Door, hinged on left

ITEM # K149 DISH CART / DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: PCD11A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model PCD11A Poker Chip Dish Dolly, 26-5/8"W x 26-5/8"D x 31-15/16"H, adjustable, dish size 4-1/4" to 11-3/4", removable dividers & towers, two-handed access, recessed handles, 5"Dia. swivel casters with neoprene wheels (2 with brakes), chip-resistant polymer shell with Microban® antimicrobial protection, aesthetic blue, vinyl dust/water splash cover, NSF
2. One (1) Model AD11A Poker Chip Dish Dolly Divider (4 each per box)

ITEM # K150 SPARE NO.

ITEM # K151 SPARE NO.

ITEM # K152 SPARE NO.

ITEM # K153 S/S SURROUND, JANITOR'S CLOSET
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Surround, Janitor's Closet
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # K154 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Four (4) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Four (4) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Four (4) Model MQ1830G MetroMax® Q™ Shelf, 30"W x 18"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K155 MOP SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: F1916

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model F1916 Mop Sink, floor mount, 24-5/8"L x 21-1/2" W x 15-1/2"H overall, 20" wide x 16" front-to-back x 8" deep bowl, 16-gauge top with "V" edge, full skirt, 2" NPS drain with stainless steel removable strainer plate, 304 stainless steel construction, NSF

ITEM # K155.1 WALL / SPLASH MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-2465

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-2465 Service Sink Mixing Faucet, splash-mounted, 8" adjustable centers, 4" wrist action handles with color coded indexes, Cerama cartridges with check valves, spout has male garden hose outlet, 1/2" NPT vacuum breaker, upper wall brace, 48" black rubber flex hose, 1/2" NPT female inlets, ADA Compliant
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male

ITEM # K155.2 MOP BROOM HOLDER
Quantity: One (1)
Manufacturer: Eagle Group
Model: US0824-16/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model US0824-16/3 Utility Shelf with Mop Hanger, 24"W x 8"D, includes mop hangers & hooks for clothes, 16/304 stainless steel construction
2. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approximately 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K156 SOILED DISHTABLE, 'L' SHAPE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Soiled Dishtable, 'L' Shape
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. (10) Model E101 Splash 10" (203mm) high - per linear foot
4. Provide provisions for item #K156.2, sink, plumbing.
5. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
6. Field verify measurements, adjust table length as necessary to fit field conditions.
7. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
8. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # K156.1 DISHTABLE SORTING SHELF
Quantity: One (1)
Manufacturer: Eagle Group
Model: 606295

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 606295 Double Sided Sorting Shelf, tubular, table mount (1" OD tubular uprights) & end wall mount, 60"W x 30.875"D x 33.375"H, use for soiled dishtables with landing shelf or with center island design, 1.625"dia. tubing, 16/304 stainless steel construction
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to furnish support for fully loaded shelves.
3. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
4. FSEC to install shelf approx. 20" above countertop of work surface.
5. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K156.2 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # K156.3 PRE-RINSE FAUCET ASSEMBLY
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0133-CR-VBJSK

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0133-CR-VBJSK Pre-Rinse Unit, 8" wall mount mixing faucet, quarter-turn cerama cartridges with check valves, lever handles, 18" riser, 44" flexible stainless-steel hose, 1.07 GPM spray valve, 6" wall bracket, vacuum breaker (B-090-FEZ), 1/2" NPT male inlets, installation kit, low lead, cCSAus
2. Provide blocking in wall to support pre-rinse bracket mounting. Blocking to be provided by GC.
3. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K156.4 PRE-RINSE SINK BASKET
Quantity: One (1)
Manufacturer: Eagle Group
Model: 606434

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 606434 Pre-rinse Basket, 17-1/2"W x 19-1/2"L x 2"H, with slide bar, for dishtables, 304 type stainless steel

ITEM # K156.5 DISPOSER
Quantity: One (1)
Manufacturer: Salvajor
Model: 200-SA-WSP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 200-SA-WSP Water Saving Package with Operator Sensor, Disposer, Sink Assembly, 2 Hp motor, start/stop push button, drain/flush/time delay, automatic reversing & water saving with safety line disconnect ARSS-LD control, includes fixed nozzle, chrome plated vacuum breaker, solenoid valve, sink stopper & flow control, heat treated aluminum alloy housing, UL, CSA, CE
2. One (1) 208v/60/1-ph, 12.1 amps
3. One (1) 3-1/2" sink mount
4. One (1) Model RSS Remote start/stop switch for all controls
5. One (1) Model LSA8 Disposer support leg, for 3/4 HP - 2 HP disposers
6. One (1) Model DP Stainless steel dejamming prong
7. Control panel and disposer shall be completely inter-piped and inter-wired by FSEC. Plumbing Contractor to make final direct drain connection, Electrical Contractor to make final electrical connection to control panel.
8. FSEC to mount controls below counter so not to interfere with adjacent equipment and clearances. Table to be provided with proper flange mounting provisions.
9. Refer to Disposer Installation Detail MEP-104 on Typical Installation Detail Sheet.

ITEM # K156.6 DISPOSER CONTROL PANEL
Quantity: One (1)
Manufacturer: Salvajor
Model: ARSS-LD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ARSS-LD Start/stop push button, drain/flush/time delay, automatic reversing & water saving control with safety line disconnect, NEMA 4 stainless steel enclosure
2. Included with item #K156.5, Disposer.
3. Disposer control panel to be mounted by FSEC contractor. Refer to elevations for location - either below stainless-steel top or above with splash provisions. All interconnections to be by FSEC. Final Connection to load center by Electrical contractor.

ITEM # K157 DISHWASHER, CONVEYOR TYPE
Quantity: One (1)
Manufacturer: Hobart
Model: CL44EN-ADV+BUILDUP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CL44EN-ADV+BUILDUP Conveyor Dishwasher, Advansys model, single tank, (202) racks/hour, insulated hinged doors, .62 gallon/rack, stainless steel enclosure panels, microprocessor controls with low temperature & dirty water indicators, NSF pot & pan mode, 30 kW stainless booster, energy recovery (DWER), automatic soil removal (ASR), drain water tempering kit, ENERGY STAR®
2. One (1) Standard warranty - 1-Year parts, labor & travel time during normal working hours
3. One (1) Model CL44EN-ADVELE0AX 208v/60/3-ph, electric heat only
4. One (1) Model CL44EN-ADVHTE15K Electric tank heat 15kW
5. One (1) Model CL44EN-ADVERH30K 30kW electric booster
6. One (1) Model CL44EN-ADVDIR0LR Left to right operation
7. One (1) Model CL44EN-ADVHGTSTD Standard height
8. One (1) Model CL44EN-ADVFETSTD Standard feet
9. Four (4) Model DISHRAK-PEG20 Peg rack
10. Six (6) Model DISHRAK-COM20 Combination rack
11. One (1) Model CLE/TBL-SWITCH Table limit switch CLE-Series
12. One (1) Model SEF-8583-A Single Point electrical connection at 208- 240/60/3 W/30 KW booster & CL64e/86e at 208/240Volt. Without breakers.
13. FSEC to interconnect auto stop switch with dishmachine installing in clean dishtable end.

ITEM # K157.1 CONDENSATE HOOD
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Condensate Hood
2. The hood shall be a condensate hood, Halton Model CH. It shall be fabricated entirely of 18-gauge #300 series stainless steel with number 4 finish. Exposed external welds shall be ground and polished to match original material finish. Construction shall conform to the requirements of National Sanitation Foundation (NSF) standard 2 and bear the NSF approval label.
3. Hood shall have a full perimeter gutter, stainless steel drain connection and full-length internal baffles. Hood shall have integral exhaust collar.
4. Hood to be supplied with LED fixture with aluminum heat sink, 3500K color, 50 FC at the cooking surface, 50,000-hour life and 20-watts per fixture.
5. Provide stainless steel ceiling make up air plenum with 10% open perforated panels. Make-up air will be calculated so that the same amount of air will be taken from the zone as is required by the specified system. Any additional load cannot be placed on the kitchen HVAC system.

ITEM # K157.2 WATER FILTER SYSTEM, WAREWASHING
Quantity: One (1)
Manufacturer: Everpure
Model: EV979911

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV979911 HTS-11 Kleenware™ System, Cartridge incorporates HydroBlend, a specially blended compound that inhibits limescale build-up and reduces corrosion
2. One (1) Model EV979922 HT-10 Kleenware™ Cartridge, fits Kleenware HTS-11 system, Cartridge incorporates HydroBlend, a specially blended compound that inhibits lime scale build-up and reduces corrosion (6 each per pack)
3. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
4. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
5. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
7. Install filter as per elevations on food service drawings.
8. FSEC to provide a sticker and date of installation on filter cartridges.
9. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
10. For more information see filter installation detail MEP-101.

ITEM # K158 CLEAN DISHTABLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CDTR-96-16/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CDTR-96-16/3 Clean Dishtable, straight design, 96"W x 30"D x 43-1/2"H overall, left-to-right operation, 16/304 stainless steel top, 8"H backsplash, raised rolled edges on front & side, galvanized legs & crossbracing, adjustable metal feet, NSF
2. One (1) Model E30 End splash, factory installed, welded, per end, all heights, right end
3. Eight (8) Model E101 Splash 10" (203mm) high - per linear foot
4. Stainless Steel Dishtable, size and shape as shown on drawing. Item is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
5. Field verify measurements, adjust table length as necessary to fit field conditions.
6. Dealer to provide shop drawings submittal for review and approval before starting manufacturing.
7. Where top abuts any walls, provide a 10" high splash, 2 thick with a 45-degree return to the wall.

ITEM # K158.1 WIRE RACK, EPOXY COATED, WALL MOUNT, 1-TIER
Quantity: Two (2)
Manufacturer: Metro
Model: 1436NK3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 1436NK3 Super Erecta® Shelf, wire, 36"W x 14"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
2. Four (4) Model 1WD14K3 Direct Wall Mount Bracket, for NK3
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K159 RACK DOLLY
Quantity: One (1)
Manufacturer: Metro
Model: DH2020N

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # K160 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Eight (8) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Eight (8) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
7. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # K161 SPARE NO.

ITEM # K162 FOUR-BOWL SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Four-Bowl Sink
2. One (1) Model E41 Disposal provision package, includes weldment only for collar which are furnished by others, control panel bracket weldment, & holes for pre-rinse & anti-siphon vacuum breaker
3. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
4. FSEC is responsible for field verification of space available prior to fabrication.
5. Adjust item as required if field conditions deem it necessary.
6. Vendor to provide Chemical Sanitizing Agent System (Pre-Wash, Rinse, Sanitize). Sinks should be clearly labeled showing water lines and cleaning stage.
7. Where top abuts any walls, provide side splash.

ITEM # K162.1 WIRE RACK, EPOXY COATED, WALL MOUNT, 1-TIER
Quantity: Two (2)
Manufacturer: Metro
Model: 1436NK3

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 1436NK3 Super Erecta® Shelf, wire, 36"W x 14"D, Metroseal™ Green epoxy-coated corrosion-resistant finish with Microban® antimicrobial protection, plastic split sleeves are included in each carton, NSF
2. Four (4) Model 1WD14K3 Direct Wall Mount Bracket, for NK3
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K162.2 WALL / SPLASH MOUNT FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0231-CR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0231-CR Faucet, 12" swing nozzle, 8" wall mount base, 1/2" NPT female Inlets, quarter-turn Cerama cartridges, low lead, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K162.3 DRAIN, LEVER / TWIST WASTE
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-3940

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-3940 Waste Valve, twist handle, 3" sink opening, 2" drain outlet with 1-1/2" adapter

ITEM # K163 HOSE REEL
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-7132-U03XS5

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-7132-U03XS5 Hose Reel Control Unit, wall-mount open stainless steel hose reel with 3/8" x 35' heavy-duty non-marking hose, ratcheting system, high flow spray gun with swivel, multi-fit bracket & adjustable hose bumper, wall-mount stainless steel water control cabinet containing 1/2" union inlets & outlet, 1/2" check valves, loose key mixing valve with compression spindles, bi-metallic thermometer, dual check valve backflow preventer, shut-off valve & water hammer arrestor, hose reel connector kit with 1/2" NPT elbow, 18" riser & vacuum breaker
2. One (1) Model B-0230-K Installation Kit, (2) 1/2" NPT nipples, lock nuts & washers, (2) short "EII" 1/2" NPT female x male
3. One (1) 1-year limited warranty for hose, standard
4. One (1) 2-year limited warranty for hose reel, standard
5. G.C. to reinforce wall behind hose reel to sustain weight while in use.
6. G.C. to furnish and install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Hose Reel to be installed as per elevations.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K164 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0001-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0001-00 Hand Sink, wall mount, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, 304 stainless steel construction, basket drain, tubular wall support & brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K164.1
9. Owner to provide towel & soap dispenser.

ITEM # K164.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K165 S/S WALL FLASHING, DISHWASHING
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Wall Flashing, Dishwashing
2. Stainless Steel Wall Protection Panels, size and shape as shown on drawings covering extent of the whole room perimeter. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents. Provide with all options, accessories and features as listed below.
3. Panels shall be constructed from 18-gauge stainless steel panel sections.
4. Wall panels shall be fitted with 1/2" wide off-set seams at intermediate joints to allow panel sections to fit tightly against the wall.
5. Bottom of panels to sit on integral flooring cove base and are to extend 60" high.
6. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction.
7. Seal end seams with General Electric clear silicone sealer.
8. It is the responsibility of the Kitchen Equipment Contractor to coordinate and make all appropriate cut-outs in paneling based on utility requirements in this location and apply appropriate s.s. trim strips, caps, gussets, etc.
9. Refer to S/S Wall Panel Detail #FAB-24.

ITEM # K166 S/S SURROUND, PASS-THRU WINDOW
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Surround, Pass-Thru Window
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.

ITEM # K167 SPARE NO.

ITEM # K168 S/S SERVICE STATION COUNTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Service Station Counter
2. Provide provisions for item #K168.1, sink, plumbing.
3. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
4. FSEC is responsible for field verification of space available prior to fabrication.
5. Adjust item as required if field conditions deem it necessary.

ITEM # K168.1 HAND SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E20

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E20 Sink, 10" x 14" x 9-1/2" bowl, for 30"W tables, complete with faucet & basket drain; sink location per plan.

ITEM # K168.2 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3100-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K168.3 TOWEL/SOAP DISPENSER, SURFACE MOUNTED
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 1471-11

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1471-11 Towel/Soap Dispenser, Surface Mounted
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's standard facility paper towel size/fold.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K169 DIPPER WELL
Quantity: One (1)
Manufacturer: Server Products
Model: 87740

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 87740 CW, CONSERVEWELL™ MOUNTED UTENSIL HOLDER, keeps utensils above 140°F, with key slot mounting brackets and (2) short-handled, utensil compartments: 1/9-size, 4" deep stainless steel, pans (90106), for use with plastic handled utensils and non-gel-filled dishers, 400 watts, 120v/60/1-ph, 3.3 amps, cord, NEMA 5-15P, cULus, NSF
2. One (1) 2-Year warranty

ITEM # K170 SPARE NO.

ITEM # K171 BEVERAGE COUNTER
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Beverage Counter
2. Provide provisions for item #K171.1, sink, plumbing.
3. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
4. FSEC is responsible for field verification of space available prior to fabrication.
5. Adjust item as required if field conditions deem it necessary.

ITEM # K171.1 PREP SINK, WELD-IN
Quantity: One (1)
Manufacturer: Eagle Group
Model: E24A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model E24A Sink, 20" x 20" x 14" bowl, for 30"W tables, complete with faucet & basket drain, sink location per plan.

ITEM # K171.2 PANTRY FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K171.3 SHELVING, WALL MOUNTED
Quantity: Four (4)
Manufacturer: Eagle Group
Model: SWS1548-14/3

Furnish and set-in place per manufacturer's standard specifications:

1. Four (4) Model SWS1548-14/3 Snap-n-Slide® Shelf, wall-mounted, 48"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 180 lbs. weight capacity, 14/304 stainless steel construction, NSF
2. Four (4) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K171.4 SHELVING, WALL MOUNTED
Quantity: One (1)
Manufacturer: Eagle Group
Model: SWS1536-16/3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SWS1536-16/3 Snap-n-Slide® Shelf, wall-mounted, 36"W x 15"D, rolled frontedge, 1-1/2"H up-turn on sides & rear, stainless steel wall brackets mount to wall studs (no wall backing required), 135 lbs. weight capacity, 16/304 stainless steel construction, NSF
2. One (1) Model 358115 Divider, 15"W, for Snap-n-Slide wall shelf, 4"H
3. FSEC to furnish proper type of stainless-steel mounting hardware for wall shelf to sustain weight while in use.
4. GC to furnish and install blocking in wall, as needed to support fully loaded shelf.
5. FSEC to install shelf approximately 20" above countertop of work surface.
6. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K172 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR27HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR27HC Undercounter Refrigerator, one-section, 27"W, rear mounted self-contained refrigeration, 6.15 cubic feet capacity, (1) self-closing door, (2) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/10 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: standard on right
7. One (1) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # K173 SPARE NO.

ITEM # K174 WATER FILTER SYSTEM, COMBINATION APPLICATIONS
Quantity: One (1)
Manufacturer: Everpure
Model: EV933042

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV933042 High Flow CSR Twin-MC2 System, for combination coffee brewers, fountain, ice & steam, 18,000-gallon capacity, 3.34 gpm flow rate, 0.2-micron rating, (2) MC 0.2-micron precoat Cartridges (1) SRX scale reduction feeder (1) EC210 pre-filter, water shut-off, pressure gauges, flushing valve
2. One (1) This system requires (2) cartridges, (1) pre-filter & (1) scale reduction feeder.
3. Two (2) Model EV961256 Everpure® MC² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, reduces sediment, chlorine, taste & odor, cysts, bacteria
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. One (1) Model EV979902 Everpure® SS-10 ScaleStick® Cartridge, features Hydroblend™ compound for scale inhibition, 0.1-6.0 gpm flow rate, 150°F temperature limit, translucent cartridge allows visual monitoring, fits most standard 10" housings, (12 each per case)
6. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
7. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
8. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
9. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
10. Install filter as per elevations on food service drawings.
11. FSEC to provide a sticker and date of installation on filter cartridges.
12. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
13. For more information see filter installation detail MEP-101.

ITEM # K175 RACK DOLLY
Quantity: Two (2)
Manufacturer: Metro
Model: DH2020N

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model DH2020N Dish Rack Dolly, platform design, single stack, designed for 20" x 20" racks, tubular steel handle, 5" Heavy duty, non-marking, resilient tread swivel casters, bumper corners, all aluminum construction, with handle

ITEM # K176 ICE MACHINE, NUGGET COMPRESSED
Quantity: One (1)
Manufacturer: Follett LLC
Model: HCC1010ABT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model HCC1010ABT Horizon Elite™ Ice Machine, air-cooled, self-contained condenser, for mounting on Follett ice storage bins, up to 1100 lb. production of Chewblet® ice in 24 hours, 208-230v/60/1-ph, NSF, cETLus
2. One (1) 3-year parts & labor warranty, additional 2 years compressor warranty (parts only), standard
3. One (1) 208-230/60/1, 11.0 amps, NEMA 6-15P, standard
4. One (1) Model 01038652 Nu-Calgon IMS-III Sanitizer, case of (12) 16 oz bottles, NSF
5. FSEC to coordinate and size adaptor to work with vendor provided soda dispenser.
6. Refer to application chart in cutbook for correct ice machine to dispenser kit.
7. FSEC shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters and soffits.
8. Plumbing Contractor shall provide water line as a flexible swirl hose with quick disconnect.
9. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.

ITEM # K177 REACH-IN REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RS-2D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RS-2D-S1-HC UltraSpec™ Series Refrigerator, Reach-in, two-section, self-contained refrigeration, 44.57 cu. ft. capacity, (2) full height solid hinged doors, (6) silver freeze (chrome-style) shelves, stainless steel exterior & interior, standard depth cabinet, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2 year warranty, stainless steel breakers, R290 Hydrocarbon refrigerant, 1/3 HP, cULus, UL EPH Classified, UL-Sanitation, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 10.7 amps with cord & plug
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. Thirty-Six (36) Model 10601201S Type "A/C" Tray Slide Pair, 1 tray slide set for (1) 18" x 26" or (2) 14" x 18" or (2) 12" x 20" Pans
8. One (1) 6" Casters, in lieu of standard 6" stainless steel legs

ITEM # K178 HAND SINK
Quantity: One (1)
Manufacturer: Eagle Group
Model: YSCOPOS-HSA-0002-00

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model YSCOPOS-HSA-0002-00 Hand Sink, pedestal mounted base, 13-1/2" wide x 9-3/4" front-to-back x 6-3/4" deep bowl with MicroGard™ antimicrobial finish, single faucet hole for T&S EC-3101-HG by others, P-trap, tail piece, basket drain, deep-drawn positive drain sink bowl, 7-1/2" High backsplash, 304 stainless steel construction, mounting brackets, inverted "V" edge, NSF
2. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support Hand Sink on wall.
3. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
4. GC to furnish and install blocking in wall, as needed to support Hand Sink.
5. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
6. Refer to MEP-103 hand sink details for additional requirements and provisions.
7. Equipment to be NSF and UL listed and labeled.
8. To be provided with T&S Brass Faucet, item #K178.1
9. Owner to provide towel & soap dispenser.

ITEM # K178.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3101-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3101-HG ChekPoint™ Electronic Faucet, wall mount, rigid gooseneck with vandal resistant aerator, AC/DC control module, mixing tee, with hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K179 FARM TABLE
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Farm Table
2. Size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. FSEC is responsible for field verification of space available prior to fabrication.
4. Adjust item as required if field conditions deem it necessary.

ITEM # K180 HAND SINK, UNDERMOUNT
Quantity: One (1)
Manufacturer: Eagle Group
Model: SR10-14-5-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SR10-14-5-1 Self-Rimming Undermount Sink, one compartment, 10" wide x 14" front-to-back x 5" deep bowl, 4" OC deck mount faucet with gooseneck spout (302004), includes basket drain, 20/304 stainless steel construction, NSF
2. One (1) Model E44 Punching extra faucet holes or changing location of faucet holes from standard
3. One (1) Model 362188 Bottom-Mount Kit, (8) undermount clips per kit
4. Omit standard faucet, provide T&S Brass item #K180.1

ITEM # K180.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3100-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # K180.2 TOWEL/SOAP DISPENSER, SURFACE MOUNTED
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 1471-11

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1471-11 Towel/Soap Dispenser, Surface Mounted

ITEM # K181 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: 430S

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 430S Bun Pan Rack, Under-Counter, Stainless Series, 20.5"W x 26"D x 32"H, Stainless Steel Construction, End Load, 3" Angle Spacing, (8) 18" x 26" or (16) 13" x 18" pans (2 per shelf), 5" Swivel Stem Casters model # CSS45PU, Made in USA, NSF
2. One (1) Model /S Accessories, Work Top - Stainless Steel, Made in USA
3. One (1) Model /O11 Accessories, Caster Brakes (Set of 2)

ITEM # K182 DUNNAGE RACK
Quantity: Two (2)
Manufacturer: Channel Manufacturing
Model: ES2048

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model ES2048 Dunnage Rack, Tubular Dunnage Rack, Stainless Series, 48"W x 20"D x 12"H, Stainless Steel Construction, (4,000) lb. distributed weight capacity per shelf, Made in USA, NSF
2. Two (2) Lifetime warranty against rust and corrosion

ITEM # K183 CAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: CSBR-80M

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CSBR-80M Can Rack, Can and Storage Rack, Mobile, 25.5"W x 35"D x 82.25"H, Aluminum Construction, (80) #10 Cans, 5" x 2" Heavy-Duty Swivel Plate Casters w/ Zerk Grease Fitting model # CPS25U, Made in USA, NSF
2. One (1) 5-year warranty on parts and 90 days labor, standard
3. One (1) Lifetime warranty against rust and corrosion

ITEM # K184 ICE MAKER, CUBE-STYLE
Quantity: One (1)
Manufacturer: Manitowoc
Model: IYT0500A

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model IYT0500A Indigo NXT™ Series Ice Maker, cube-style, air-cooled, self-contained condenser, 30"W x 24"D x 21-1/2"H, production capacity up to 550 lb./24 hours at 70°/50° (440 lb. AHRI certified at 90°/70°), easyTouch display with 13 different language options, date/time stamp display, automatic reminder/alert icon, one touch asset information, automatic detection of accessories, continuous operating status, programmable production options (time, weight, day or night), one touch cleaning with displayed instructions, Alpha-San anti-microbial protection, acoustical ice sensing probe, self-diagnostic technology, DuraTech™ exterior, half-dice size cubes, R410 refrigerant, NSF, cULus, CE, ENERGY STAR®
2. One (1) Model WARRANTY-ICE-SC 3-year parts & labor (Machine), 5-year parts & labor (Evaporator), 5-year parts & 3 years labor (Compressor), standard
3. One (1) (-161) 115v/60/1-ph, 11.5 amps
4. One (1) Model X Factory Built-In LuminIce II Virus & Bacteria Inhibitor, comes pre-installed in ice machine
5. One (1) Model WARRANTY-LUMINICE 3-year parts & labor warranty, standard
6. One (1) Model K00454 UV Replacement Bulb (blue end caps)
7. One (1) Model K00455 Remote Luminice II LED indicator
8. One (1) Model IAUCS iAuCS Automatic Cleaning System, accessory for Indigo NXT Cubers iF0300 - iT1900 & QuietQube models iF600C - iF2100C, external mounting, assembly does not include cleaner or sanitizer, NSF, cULus
9. One (1) Model WARRANTY-AUCS 3-year parts & labor warranty, standard
10. One (1) (-161) 115v/60/1-ph, 0.1 amps
11. One (1) Model K00379 Top Air Discharge Kit
12. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.

ITEM # K184.1 ICE BIN FOR ICE MACHINES
Quantity: One (1)
Manufacturer: Manitowoc
Model: D570

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model D570 Ice Bin, 30"W x 34"D x 50"H, with side-hinged front-opening door, side grips, 532 lbs. application capacity, AHRI certified 17.9 cu. ft., for top-mounted ice maker, Duratech exterior, NSF
2. One (1) Model WARRANTY-BIN/DISP 3-year parts & labor warranty, standard
3. One (1) Legs, 6" adjustable stainless steel, standard
4. One (1) Model K00463 Ice Scoop, 85 oz (5.3 lbs.) capacity, thumb & knuckle guard, rubber handle, internal or external bin mounting (compatible with D Bins), cast aluminum, NSF
5. One (1) Model K00461 External Scoop Holder, wall or bin mount, metal frame with plastic shield, NSF

ITEM # K184.2 WATER FILTER SYSTEM, ICE MACHINE
Quantity: One (1)
Manufacturer: Everpure
Model: EV932422

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV932422 Insurice® Twin PF-i2000² Twin System, with prefilter, 18,000-gallon capacity, 3.34 gpm flow rate, 0.5-micron precoat filtration, for cubers up to 1,450 lbs./day or flakers up to 2,200 lbs./day, pressure gauge, flushing valve, NSF, ANSI
2. One (1) This system requires (2) cartridges.
3. Two (2) Model EV961222 Everpure® i2000² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, chlorine taste & odor reduction, scale inhibitor, cyst reduction 35-100° F temperature, 10-125 PSI non-shock required, ANSI, NSF
4. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
5. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
6. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
7. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
8. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
9. Install filter as per elevations on food service drawings.
10. FSEC to provide a sticker and date of installation on filter cartridges.
11. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
12. For more information see filter installation detail MEP-101.

ITEM # K184.3 FLOOR TROUGH
Quantity: One (1)
Manufacturer: Eagle Group
Model: ASFT-1236-SG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ASFT-1236-SG Anti-Splash Floor Trough, 36"W x 12"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drainpipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. For more information see detail FAB-100 on the typical detail installation sheet.

ITEM # K185 FLOOR TROUGH
Quantity: One (1)
Manufacturer: Eagle Group
Model: ASFT-1824-SG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model ASFT-1824-SG Anti-Splash Floor Trough, 24"W x 18"D, stainless steel subway-style grating, 6" deep trough pan with built-in pitch toward drain, accommodates up to a 4" diameter drainpipe, stainless steel removable perforated basket, all-welded 14/304 stainless steel construction, NSF
2. General Contractor (GC) shall provide floor recess and install floor pan in recess flush with adjacent kitchen floor in a watertight manner.
3. FSEC to provide drawing showing cut-out size and location, in floor, to ensure proper pour path for equipment.
4. For more information see detail FAB-100 on the typical detail installation sheet.

ITEM # K186 ROLL-IN REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: RIS-1D-S1-HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RIS-1D-S1-HC UltraSpec™ Series Refrigerator, Roll-in, one-section, self-contained refrigeration, 34.86 cu. ft. capacity, stainless exterior & interior, standard depth cabinet, (1) full height 20-gauge stainless steel door, TOUCH POINT™ electronic temperature control/indicator, LED lighting, expansion valve technology, Santoprene door gaskets with 2-year warranty, stainless steel breakers, stainless steel ramp, 1/3 HP, cULus, UL-Sanitation, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 2-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 6.5 amps, cord with NEMA 5-15P
6. One (1) Door hinging: standard on right

ITEM # K186.1 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: AXD1818

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model AXD1818 Bun Pan Rack, LifeTime Tough, EXTRA Heavy-Duty Series, 22"W x 26"D x 64"H, Aluminum Construction, End Load, 3" Angle Spacing, (18) 18" x 26" or (36) 13" x 18" pans (2 per shelf), 5" x 2" Heavy-Duty Swivel Plate Casters w/ Zerk Grease Fitting model # CPS25U, Made in USA, NSF
2. One (1) Lifetime warranty for traditional foodservice applications
3. One (1) Model /015 Accessories, Pan Stop - Web-Strap
4. One (1) Model /5B Accessories, Caster Brakes, Heavy-Duty (Set of 2
5. FSEC to verify that racks will fit roll-in (item number #K186) properly.

ITEM # K187 PREP SINK, UNDERMOUNT
Quantity: One (1)
Manufacturer: Eagle Group
Model: SR14-16-9.5-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SR14-16-9.5-1 Self-Rimming Drop-In Sink, one compartment, 14" wide x 16" front-to-back x 9-1/2" deep bowl, 4" OC deck mount faucet with gooseneck spout (302004), includes basket drain, 20/304 stainless steel construction, NSF
2. One (1) Model E44 Punching extra faucet holes or changing location of faucet holes from standard
3. One (1) Model 362188 Bottom-Mount Kit, (8) undermount clips per kit
4. Omit standard faucet, provide T&S Brass item #K187.1

ITEM # K187.1 PANTRY FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: B-0325-CR-WH4

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model B-0325-CR-WH4 Pantry Faucet, double, deck mount, 4" adjustable centers, 5-3/4" swivel gooseneck spout with Series 1 stream regulator outlet (includes lock washer to convert to rigid), 4" wrist action handles, quarter-turn Cerama cartridges with check valves, polished chrome plated brass body, 1/2" NPT female inlets, low lead, cCSAus, ADA Compliant
2. One (1) Model B-0425-M Supply Nipple Kit, includes (1) 1/2" NPT x 2" long inlet supply nipple, (1) 1/2" locknut washer & (1) 1/2" locknut, brass (2 each per master pack)

ITEM # K188 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR48HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR48HC Undercounter Refrigerator, two-section, 48"W, rear mounted self-contained refrigeration, 11.82 cubic feet capacity, (2) self-closing doors, (4) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/6 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. Two (2) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # K189 SPARE NO.

ITEM # K190 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: 430S

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 430S Bun Pan Rack, Under-Counter, Stainless Series, 20.5"W x 26"D x 32"H, Stainless Steel Construction, End Load, 3" Angle Spacing, (8) 18" x 26" or (16) 13" x 18" pans (2 per shelf), 5" Swivel Stem Casters model # CSS45PU, Made in USA, NSF
2. One (1) Model /S Accessories, Work Top - Stainless Steel, Made in USA
3. One (1) Model /011 Accessories, Caster Brakes (Set of 2)

ITEM # K191 EXHAUST HOOD
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Hood
2. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each ventilator, CFM requirements and additional construction information.
3. **CONSTRUCTION:**
Ventilators to be constructed of #18-gauge, type 304 stainless-steel. Ventilators to have an all-welded exterior, ground and polished. Ventilators are ETL Listed to UL Standards, ETL Sanitation Listed, and built-in compliance with NFPA pamphlet No. 96, BOCA, ICBO and SBCCI
Provide a concealed, full length grease trough, accessible from the top for cleaning, with removable, concealed grease cup on one end.
Provide insulation on all exposed sides (recommended when supply air is below 55° F).
Provide make-up air through a front plenum, installed in ceiling, at front of hood. Make-up air shall consist of duct collars, air volume and fire dampers, plenum, air diffuser baffle and ceiling installed discharge registers. Hood shall be designed and installed to automatically activate exhaust fan(s) whenever cooking operations occur. Activation of exhaust fan(s) shall occur through an interlock with cooking appliances, by means of thermostatic heat sensors or by means of other approved methods.
4. **CONTROLS/SWITCHES:**
FSEC shall provide an EMS – Energy Management System control panel with light and fan switches, wall mounted, in a location near hood and shall be easily accessible and factory pre-wired. Electrical Contractor to interconnect to fire suppression system and fan(s). Location of control panel/switches shall be verified before installation.
Room Temperature Sensor - Room temperature sensor is used to automatically activate fans when temperature in the exhaust duct exceeds 15 degrees Fahrenheit of room temperature.
Mounting and wiring of room temperature sensor to control panel to be done by Electrical Contractor. Two strand 18 AWG thermostat wire provided by Captive-Aire. Room temperature sensor to be field installed in a safe location free of influence from external heat sources. Do not install room temperature sensor on an external wall. Temp sensor to be located between 5-25' distance from hood.
5. **LIGHTS:**
Provide each ventilator with UL listed Component Hardware recessed 4' LED light fixture, #L82-1040-L22N wired to a main junction box. 22 Watts.
6. **DUCTWORK:**
Exhaust and supply duct collars to extend 6 above the finished ceiling for connection to overhead ductwork. Ductwork to be furnished and installed by the HVAC contractor.
Duct collars to be shipped loose for positioning in field and clearing any obstructions allowing flexibility during installation.
7. **FANS:**
Exhaust and supply air system shall be provided with proper air quantities and velocities for proper exhaust extraction and to maintain a balanced condition within the exhaust hood and surrounding building environment. See hood sheets for CFM requirements.
Exhaust and supply fans to be furnished and installed by the HVAC contractor.
8. **FILTERS:**
Furnish easily removable filters. Horizontal baffles to extract and retain grease out of the air stream. Filters to be Stainless Steel High Efficiency Baffle Filter with Handles and Bottom Hanging Hook, UL Classified. Particulate Capture efficiency, 93%, efficient at 9 microns, 74% efficient at 5 microns. NSF approved.

9. **WALL PANELS:**
Furnish and install 22-gauge stainless-steel wall panels extending from the bottom of the rear of the exhaust hood to the upper edge of the baseboard molding and extending along the full length of all wall surfaces (left, right and rear). Wall panel sections shall be joined with stainless steel divider bars to allow panel sections to fit tightly against the wall and to result in watertight seams. Secure wall panels to building wall with wall panel adhesive of proper type for wall construction. Seal end seams with General Electric clear silicone sealer. Wall panels to be insulated if applied to combustible material.
10. **TRIM:**
FSEC to furnish and install 18-gauge s/s enclosures from top of ventilators to the finished ceiling along all exposed sides, both ends and underside above stub wall to enclose spaces. Verify height of enclosure trim in field.
11. **FINISHES:**
Hoods are specified with decorative finish, hood to be provided with 1" insulated standoff with decorative finishes as specified on all exposed sides. This is to provide a 0" clearance rating per hood manufacturer listing. If the intent is to cover the hood with decorative stainless, laminate, or other panels, this material can be applied directly to the hood using adhesive or fasteners under 1" in length. Decorative finish to be supplied and installed by FSEC.
When installing a large or heavier surround such as tile, coordinate a soffit to be dropped around the hood. This will better support the weight of the cement board and tile. Soffit and tile to be provided and installed by GC. Refer to architectural details.
Refer to "EXH-13 - Hood - Decorative Fascia Finish Detail" for additional information.
12. **FIRE PROTECTION SYSTEM:**
Fire Cabinet, to house fire suppression system and hood controls. FSEC to verify which side of hood and ensure cabinet doors clear for opening.
Hood to be pre-piped for Ansul Fire Protection System, Item #K191.2, there should be no field cutting or modifications to hood.
FSEC is responsible for coordinating installation with Fire Protection System, and cooking equipment.
13. **INSTALLATION:**
Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with 1/2" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
14. **COORDINATION:**
FSEC to coordinate final hood design with HVAC engineers and Contractor to ensure adequate space allocation for hood and verification of duct connection points, clearance above hood, etc.
If combustible surfaces exist above the hood - provide 3M insulated stainless steel panel installed above hood for clearance compliance to combustible surfaces. Insulated panel to extend 18" past hood on sides and front.
FSEC to verify rough and finish ceiling heights for final hood dimensions and trim requirements.
Applicable trades shall connect building rough ins to hood control cabinet and hood and make all necessary interconnections from the control cabinet to the hood and fans.
Structural engineer shall be responsible for reviewing all hood information and shop drawings and providing an appropriate support structure.

15. **SYSTEM DESIGN VERIFICATION (NOT OPTIONAL):**

After completion of the hood installation and utility connections by site trades, Food Service Equipment Contractor shall secure CAS - "Captive Air Systems" Service to perform a System Design Verification (SDV). The SDV will be performed after all inspections are complete. Any field related discrepancies that are discovered during the SDV will be brought to the attention of Food Service Equipment Contractor, General Contractor and corresponding trades on site. These issues will be documented and forwarded to the appropriate sales office and design team. During the SDV, CAS Service will address any discrepancy that is the fault of the manufacturer at no cost. If CAS Service has to resolve a discrepancy that is a field issue, the General Contractor will be notified and will need to approve the work to be completed either by CAS Services or direct respective trades to remedy those issues.

ITEM # K191.1	HOOD CONTROLS
Quantity:	One (1)
Manufacturer:	Captive-Aire
Model:	CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Hood Controls
2. **HOOD CONTROL PANEL**
MANUFACTURER: CAPTIVE-AIRE
MODEL: DCV-I 1 1 1
3. **FEATURES:**
DCV-1111 Demand Control Ventilation, w/ 1 Exhaust Fan, 1 Supply Fan, Exhaust on in Fire, lights out in Fire, Fans modulate based on duct temperature. INVERTER DUTY THREE PHASE MOTOR REQUIRED to be sized by MEP engineers and provided by mechanical engineer. Room temperature sensor shipped loose for field installation. Dealer to verify distance between VFD and Motor and provide appropriate length.
Control package Includes 4 Duct Thermostat kits. – ESV371N02YXBS71 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA 1 Enclosure, with 2RJ-45 FOR MODBUS – ESV371N02YXB571 – Variable Frequency Drive – 1/2 HP Max., 200/240 V, Single or Three Phase Input, 2.4 A Max., NEMA I Enclosure, with 2RJ-45 FOR MODBUS – 20 wide XI 8 tall X8.62 deep SS HINGED ELECTRICAL BOX NEMA I – VENTED. Install out of site/view from front of the house and in a recessed wall when possible. Do Not block ventilation ports and provide clearance around the enclosure.
Digital Prewire Lighting Relay Kit. Includes hood lighting relay & terminal blocks. Allows for up to 1400W of lighting each. – Thermistor CABLE – 18/2 AWG GREEN WHITE, plenum rated. USED for thermistor duct stat.
4. Refer to sheet QF-X700 - QF-X721 for Captive-Aire engineering drawings for size and shape of each control package and additional construction information.

ITEM # K191.2 FIRE PROTECTION SYSTEM
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Protection System
2. Fire Suppression System shall be furnished and installed by the Food Service Equipment Contractor and shall be an automatic wet chemical system equipped with fusible link release and a remote pull box system designed to protect the ventilator plenum, ductwork, and cooking equipment, as required. Wet chemical system shall be installed in full compliance with the requirements of Underwriters Laboratories, NFPA Pamphlet #96, Insurance Interests, and ventilator manufacturer. Interior piping and nozzles shall be installed in the ventilator to ensure compatibility with the terms of the UL listing
3. Cylinders and remote manual pull box shall be mounted in appropriate approved locations. System shall be complete with mounting brackets, tripping mechanisms, fusible link housings and stainless-steel cable. All $\frac{3}{4}$ " connecting pipe and cable conduit from cylinders to ventilator shall be run above the finished ceiling and concealed as much as possible. All exposed pipe, cable, conduit, tees, elbows, detector housings and nozzles shall be stainless steel, chrome plated or sheathed in chrome plated tubing. Wiring to and from the heat detectors shall be furnished and installed by the FSEC.
4. Activation shall be through: A.) manual activation of push button cabinet OR, B.) manual activation of remote manual pull station OR, C.) automatic action of fusible links or thermostatic detectors located in hood
5. Included in the installation shall be two (2) inspections of the system: one at six-month interval and one at a twelve-month interval. The responsibility for the complete recharge will be that of the owner.
6. The Electrical Contractor will furnish and install electrical conduit wiring from cylinder micro-switch (4 micro switches furnished and installed by the FSEC) to shunt trip breaker for shut-off of electrical service to equipment as required. All equipment under the hood should be on a shunt trip breaker.
7. Electric Gas shut-off valve to be furnished by the FSEC for up to 3" size and installed in the main gas line by the Plumbing Contractor. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. Gas shut off valve installation to be visible and accessible
8. FSEC to locate manual fire pull stations, coordinate with GC and note on shop drawings. Electrical Contractor to supply recessed octagon junction box at the located fire pull station. Refer to typical detail EXH-1 on Food Service Design documents.
9. Equipment to be NSF and UL300 listed and labeled.
10. Installation to be performed by authorized and licensed dealer only.

ITEM # K191.3 FIRE PULL STATION, WALL MOUNT
Quantity: One (1)
Manufacturer: Ansul Fire Protection
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Fire Pull Station, Wall Mount
2. Included in Fire Suppression System item #K191.2
3. FSEC to verify Manual Fire Pull location with the Fire Marshal prior to installing and confirm if shown location meets AHJ requirements.
4. Refer to Manual Fire Pull Detail EXH-11.

ITEM # K192 UNDERCOUNTER REFRIGERATOR
Quantity: One (1)
Manufacturer: Victory Refrigeration
Model: VUR48HC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model VUR48HC Undercounter Refrigerator, two-section, 48"W, rear mounted self-contained refrigeration, 11.82 cubic feet capacity, (2) self-closing doors, (4) epoxy coated wire shelves, full electronic control, 1/2" thick stainless-steel top, stainless steel door, front & sides, aluminum interior, Santoprene gaskets with 2-year warranty, R290 Hydrocarbon refrigerant, 1/6 HP, UL-Sanitation, cULus, UL EPH Classified, MADE IN USA
2. One (1) 3-years parts & labor warranty; excludes maintenance items
3. One (1) Self-Contained refrigeration
4. One (1) Additional 4-year compressor warranty, standard
5. One (1) 115v/60/1-ph, 2.0 amps, with cord & NEMA 5-15P
6. One (1) Door hinging: left door hinged on left; right door hinged on right standard
7. Two (2) Model 00C30-099A Door Lock
8. One (1) 3" Casters, in lieu of standard 6" casters

ITEM # K193 INDUCTION RANGE WARMER, BUILT-IN / DROP-IN
Quantity: Eight (8)
Manufacturer: Vollrath
Model: 59502DW

Furnish and set-in place per manufacturer's standard specifications:

1. Eight (8) Model 59502DW Mirage® Induction Buffet Warmer, drop-in, 16-1/16"W x 16-1/16"D x 3-1/16"H, black tempered ceramic glass top, hold only or warming only, (4) power levels, LED indicator lights on control panel, connect up to (3) units together with 30" inter-connect cord & only run one power cord, 60" USB cable for remotely mounted control, 120v/50/60/1-ph, 300W, 2.5 amps, cord with NEMA 5-15P, cULus, NSF, FCC, imported
2. Eight (8) 1-year parts & labor warranty
3. **INSTALLATION:**
Units to be installed flush with 4" separation between glass. Do not use stainless trim around the perimeter for installation as this will interfere with induction performance.
Millwork Fabricator to provide support beams in between units; seal all crevices as required and follow practice outlined in national standard NSF 4. See installation detail MWK-116.
Controls to be recessed into millwork apron.
Digital Thermometer display on glass top to be oriented to operator side.
Installation to be performed by certified factory installers only - NO EXCEPTIONS
4. **STONE COMPATIBILITY:**
Units are compatible with 3/4" or 1-1/4" thick standard engineered countertops – another specific countertop material can be used as recommended by manufacturer.
5. **VENTILATION:**
Each unit requires 70 CFM free air flow with adequate enclosure venting and maximum ambient temperature of 122°F. When installed in a closed cabinet, provide McNichols 16-gauge 1614381648 perforated metal mesh or equal on doors.
At location of induction generator, AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting.
Provide cabinet fan for ventilation and air movement.

6. **ELECTRICAL CONNECTIONS:**

All internal connections from generator to each induction plate to be interconnected by FSEC utilizing factory provided wiring harness. All wiring harness to be neatly bound and run as close as possible to top corner of cabinet with zip ties. No wiring should be hanging loose on cabinet floor.

Electrical Contractor to provide single point connection to the induction generator with means of disconnect if hard wired, connection to be with a switch.

7. **COORDINATION:**

FSEC is responsible for verifying that space available will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.

FSEC is responsible for reviewing millwork shop drawings.

ITEM # K194 BUN / SHEET PAN RACK
Quantity: One (1)
Manufacturer: Channel Manufacturing
Model: 430S

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 430S Bun Pan Rack, Under-Counter, Stainless Series, 20.5"W x 26"D x 32"H, Stainless Steel Construction, End Load, 3" Angle Spacing, (8) 18" x 26" or (16) 13" x 18" pans (2 per shelf), 5" Swivel Stem Casters model # CSS45PU, Made in USA, NSF
2. One (1) Model /S Accessories, Work Top - Stainless Steel, Made in USA
3. One (1) Model /011 Accessories, Caster Brakes (Set of 2)

ITEM # K300 COFFEE BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 34600.0001

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 34600.0001 34600.0001 DUAL TF BrewWISE® DBC® ThermoFresh® Coffee Brewer, 18.9 gal/hr., coffee extraction controlled with pre-infusion & pulse brew, digital temperature control, large spray head, automatic programming, stores individual recipes, SplashGard® & optional funnel locks, wireless brewer-grinder interface, black finish, lower hot water faucet, wireless brewer-grinder interface, holds (2) 1-1/2 gallon ThermoFresh servers, 120/240v/60/1-ph, 6600w, 27.5amps, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping, and connection by Plumbing Contractor.

ITEM # K300.1 THERMAL SERVER, BREW-THRU, By Vendor
Quantity: Two (2)
Manufacturer: BUNN
Model: 42750.0000

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model 42750.0000 42750.0000 TF ThermoFresh® Server with Digital Sight Gauge, with base, 1.5 gallon, portable, brew-through lid, volume indicator display, 4-hour digital count-up timer, drip-tray, fast flow faucet, large cup clearance, soft-grip bail handle, vacuum insulated, battery operated, stainless steel finish, for use with single and dual ThermoFresh® DBC brewers, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # K301 JUICE DISPENSER, ELECTRIC, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 37300.0002

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 37300.0002 37300.0002 JDF-4S Silver Series® 4-Flavor Cold Beverage System, (3) 12 oz. drinks/min capacity, 2-modular dispense decks, 18 lb. ice bank, 7" cup clearance, dispense 1.0 to 1.5 ounces per second flow rate, pumps & mixes 2+1 to 11+1 concentrated beverages, 4+1 high viscosity & 5+1 juices, dispenses cold water, frozen and ambient products, High Intensity™ mixing technology, push button and portion control, cold water dispense, door lock, juice display, 120v/60/1-ph, 6amps, NEMA 5-15P, NSF, ETL
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # K302 ICED TEA BREWER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 36700.0009

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 36700.0009 36700.0009 TB3 Iced Tea Brewer, 3-gallon capacity single brewer, 16.3 gallon/hour, SplashGard® funnel, adjustable steep time, (dispensers sold separately), 120v/60/1-ph, 1730w, 14.4amps, NEMA 5-15P, cord attached, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # K302.1 TEA / COFFEE DISPENSER, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 34100.0000

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 34100.0000 34100.0000 TDO-4 Iced Tea/Coffee Dispenser, cylinder style, 4-gallon capacity (15.1 litres), sump dispense valve, oval shape solid plastic lid, faucet handles are labeled sweetened & unsweetened, side handles, NSF
2. G.C. to obtain specifications for equipment supplied by vendor.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination reference and space allocation only.
4. Owner shall furnish and install this item, through his vendor.
5. Owner is responsible for verifying manufacturer, model number, size, and components.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.

ITEM # K303 SODA DISPENSER, 8 VALVE, By Vendor
Quantity: One (1)
Manufacturer: Lancer
Model: IBD 4500

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model IBD 4500 Soda Dispenser, 8 Valve
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility information.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. FSEC to verify routing and destination with vendor and all applicable trades and coordinate.
9. Soda Vendor to provide a complete and operational soda delivery system that will adequately handle the soda dispensers as indicated in this specification section.
10. Soda Vendor to provide and install all lines, pumps, gauges, dispensing units, carbonators, racks, product, and miscellaneous parts. Coordinate with Food Service Director on site.
11. Soda Vendor to verify location and type of carbonators prior to installation.
12. GC to provide and install 6" PVC conduit for the soda lines. Location to be verified with the design team. Provide any ceiling penetration and access panels as required to access soda line run chase and any bends.
13. Placement of the soda line conduits are critical. Every effort shall be made to locate penetrations, so they are concealed but accessible. All applicable contractors are to coordinate conduit locations with the project manager on site.
14. Millwork fabricator to provide soda line chase and counter cut-outs in beverage counter if required. Millwork fabricator to coordinate with soda Vendor.
15. FSEC to coordinate all specifications and installation of systems in advance of close-in and fabrication with the project manager, equipment fabricators, GC, and food service consultant.
16. FSEC to coordinate and size adaptor to work with vendor provided soda dispenser.

ITEM # K304 EXHAUST FAN FOR ITEM #K114, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #K114
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # K305 EXHAUST FAN FOR ITEM #K141-B, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #K141-B
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # K306 EXHAUST FAN FOR ITEM #K141-F, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #K141-F
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # K307 EXHAUST FAN FOR ITEM #K157.1, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #K157.1
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # K308 MAKE-UP FAN, HEATED, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Make-Up Fan, Heated
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.

ITEM # K309 MAKE-UP FAN, HEATED, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Make-Up Fan, Heated
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.

ITEM # K310 BEVERAGE DISPENSER, COLD BREW AND COFFEE, By Vendor
Quantity: One (1)
Manufacturer: BUNN
Model: 34400.0001

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 34400.0001 34400.0001 LCA-2 Liquid Coffee Dispenser, ambient, 2 dispense heads, Scholle 1910LX connector, bag-in-box capacity (2) 1/2 (1.9 litre) & (1) 1 gallon (3.8 litre), dispense ratio 45:1 up to 100:1, refill or rinse LED lights, black decor, 4" adjustable plastic legs, 120v/60/1-ph, 14.2 amps, NEMA 5-15P, cord attached, UL, NSF
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
3. Owner shall furnish and install this item, through his vendor.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Owner shall furnish GC with this information for utility requirements.
6. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
7. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
8. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
9. Drain to be indirect to nearest floor sink, piping and connection by Plumbing Contractor.

ITEM # K311 ICE CREAM DIPPING CABINET, By Vendor
Quantity: One (1)
Manufacturer: Master-Bilt Products
Model: DC-2SSE

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model DC-2SSE Ice Cream Dipping Cabinet, dip (3) 3-gallon, store (1) 3 gallon, cold-wall evaporator, stainless steel exterior cabinet, galvanized steel interior, stainless steel top with anti-condensate heater, flip lid, temperature range 10° to -10°F, 1/4 hp, 115v/60/1-ph, 2.1 amps, 9' cord, NEMA 5-15P, cULus, NSF
2. One (1) 2-year parts and labor warranty
3. One (1) 5-year compressor part warranty
4. One (1) Model 44-00470 Lids, single lid, for DC series
5. One (1) Model A039-11140 Casters, 2" dia. (set of 4)
6. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination, reference, and space allocation only.
7. Owner shall furnish and install this item, through his vendor.
8. Owner is responsible for verifying manufacturer, model number, size, and components.
9. Owner shall furnish GC with this information for utility requirements.
10. Owner shall be responsible for verifying that space available will accommodate unit(s) and that these interface properly with adjacent equipment and counters.
11. FSEC is responsible for coordinating installation of this item with Owner and GC in relation to adjacent and associated equipment.
12. GC to provide finished hole(s) in wall to accommodate utility lines, as needed, in coordination with Owner and Owner provided equipment.
13. Drain to be indirect to nearest floor sink, piping, and connection by Plumbing Contractor.

ITEM # K312 BAG & BOX SYSTEM, By Vendor
Quantity: One (1)
Manufacturer: By Vendor
Model: BY VENDOR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Bag & Box System
2. Refer to Item #K303, Soda Gun, for installation notes.
3. Electrical Contractor to provide standard 20-amp receptacle at location.
4. Refer to Beverage Conduit Installation Detail MEP-401 on Typical Installation Detail Sheet.

ITEM # K313 EXHAUST FAN FOR ITEM #K157.1, BY MEC
Quantity: One (1)
Manufacturer: Captive-Aire
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Exhaust Fan for Item #K191
2. MEC to size and provide.
3. Refer to sheet QF-X700 - QF-X721 Captive-Aire engineering drawings for CFM requirements and additional hood information.
4. MEC to size and provide based on CFM requirements as engineered by hood manufacturer.

ITEM # K400-K403 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:
Item K400 – Spare No.
Item K401 – Spare No.
Item K402 – Front Counter, Millwork
Item K402.1 – Duplex Convenience Receptacle, Recessed (Qty. 4)
Item K403 – Mobile Chef Table, Maple Top
- B. **MANUFACTURER:**
Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com
- C. **SUBSTITUTIONS:**
Substitutions: no substitutions/alternate manufacturers shall be accepted.
- D. **CERTIFICATION:**
AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.
UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.
NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.
- E. **GENERAL CONDITIONS:**
Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.
- F. **RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDE BY OTHER TRADES:**
1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
 2. Rubber, vinyl, or other material for finishing cabinet toe kicks.
 3. Locks Master key to room doors and other special locks.
 4. Blocking within walls.
 5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated, and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASCTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
 - (1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** Stained Wood Finish or P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.
8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.

2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs, and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides.

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED: FINISHED** - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR: APPLIED PANEL** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR: FINISHED** - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE:** TOP STRETCHERS or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL TOP - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE:** FULL BOTTOM with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL BOTTOM with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS:** FULL BACK - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moisture barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer front selections.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **FLAT WOODEN:** Custom Design to be determined by client.
5. **PANELED WOOD:** Custom Design to be determined by client.
6. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.
7. **FRAME-ONLY GLASS:** Shall be 3/4 " thick frame, laminated both sides with HPL or be stained/painted veneer. Glass shall be clear acrylic and shall be retained in openings with removable glazing. Doors shall be available for both sliding and hinged designs. Custom Design to be determined by client.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
3. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
4. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.
5. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
6. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
7. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
8. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with 12 inches between.

- (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
 9. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 1/2" unless required by site conditions.
 10. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors, or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
 11. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
 12. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
 13. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering); Refer to architectural/interior design documents for finish selections and locations.
 14. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 15. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 16. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 17. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
- K. EQUIPMENT INTEGRATION & PROTECTION:**
1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
 2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and 1/4" air gap.

3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
 4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
 5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
 6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
 7. **AIR FLOW & VENTALATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.
- L. **COORDINATION:**
1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
 2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
 3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.
- M. **SUBMITTALS:**
1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
 2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
 3. Include MEP sheet if a part of the Scope.
 4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
 5. Submit samples of exposed material colors and hardware as requested by the architect/owner.
- N. **JOB CONDITIONS**
1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
 2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
 3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.

4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent, or excessive changes in temperature or humidity level over the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location, and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing, and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or FLOORS in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
13. Walls and Partitions (whether framed, demountable or masonry) must be in place.
14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
17. Elevator, hoist, or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.

O. INSTALLATION, QUALITY ASSURANCE AND WARRANTY:

1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
3. Install and trim millwork to walls, floors, ceiling, and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking, or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care, and maintenance of custom millwork.
7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # K500	TRASH BIN, SLIM JIM, SMALLWARES
Quantity:	One (1)
Manufacturer:	Smallwares
Model:	SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # K501 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K502 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # K503 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K504 POS PRINTER, SMALLWARES
Quantity: One (1)
Manufacturer: Epson
Model: TM-U220

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TM-U220 POS Printer
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K505 POS PRINTER, SMALLWARES
Quantity: One (1)
Manufacturer: Epson
Model: TM-U220

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TM-U220 POS Printer
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K506 SPARE NO.

ITEM # K507 TRASH CAN, 32-GAL W/ DOLLY, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Can, 32-Gal w/ Dolly
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # K508 GLASS RACK, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # K509 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # K510 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K511 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K512 GLASS RACK, SMALLWARES
Quantity: Two (2)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model SMALLWARES Glass Rack
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K513 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K514 CAMERA SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Camera System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K515 TOWEL/SOAP DISPENSER, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Towel/Soap Dispenser
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. GC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # K516 CAMERA SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Camera System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K517 CAMERA SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Camera System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K518 SPARE NO.

ITEM # K519 CAMERA SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Camera System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K520 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K521 SPARE NO.

ITEM # K522 POS PRINTER, SMALLWARES
Quantity: One (1)
Manufacturer: Epson
Model: TM-U220

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TM-U220 POS Printer
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K523 POS PRINTER, SMALLWARES
Quantity: One (1)
Manufacturer: Epson
Model: TM-U220

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TM-U220 POS Printer
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K524 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # K525 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K526 SPARE NO.

ITEM # K527 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K528 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size and components.

ITEM # K600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: Seven (7)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. Seven (7) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

ITEM # K700-K724 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 - Item #K700 – Floor Sink
 - Item #K701 – Floor Sink
 - Item #K702 – Area Floor Drain
 - Item #K703 – Floor Sink
 - Item #K704 – Area Floor Drain
 - Item #K705 – Floor Sink
 - Item #K706 – Area Floor Drain
 - Item #K707 – Area Floor Drain
 - Item #K708 – Floor Sink
 - Item #K709 – Area Floor Drain
 - Item #K710 – Area Floor Drain
 - Item #K711 – Floor Sink
 - Item #K712 – Floor Sink
 - Item #K713 – Floor Sink
 - Item #K714 – Floor Sink
 - Item #K715 – Area Floor Drain
 - Item #K716 – Area Floor Drain
 - Item #K717 – Spare No.
 - Item #K718 – Floor Sink
 - Item #K719 – Floor Sink
 - Item #K720 – Area Floor Drain
 - Item #K721 – Floor Sink
 - Item #K722 – Funnel Floor Drain
 - Item #K723 – Area Floor Drain
 - Item #K724 – Floor Sink
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be sloped to A.F.D
12. Provide additional A.F.D as required.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

ITEM # K800 DIGITAL MENU BOARD, SIGNAGE
Quantity: One (1)
Manufacturer: Signage
Model: SIGNAGE

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SIGNAGE Digital Menu Board
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. To be mounted per manufacturer's instructions; Per code digital monitors on resident/client accessible walls to be mounted no more than 4" off of wall face.

PRIVATE DINING

ITEM # D100 HAND SINK, UNDERMOUNT
Quantity: One (1)
Manufacturer: Eagle Group
Model: SR10-14-5-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SR10-14-5-1 Self-Rimming Drop-In Sink, one compartment, 10" wide x 14" front-to-back x 5" deep bowl, 4" OC deck mount faucet with gooseneck spout (302004), includes basket drain, 20/304 stainless steel construction, NSF
2. One (1) Model E44 Punching extra faucet holes or changing location of faucet holes from standard
3. One (1) Model 362188 Bottom-Mount Kit, (8) undermount clips per kit
4. Omit standard faucet, provide T&S Brass faucet, item #D100.1
5. Mount and seal sink to underside of stone utilizing manufacturer recommended sealer and fasteners; Ensure a complete even seal without any gaps.

ITEM # D100.1 HANDS FREE ELECTRONIC FAUCET
Quantity: One (1)
Manufacturer: T&S Brass
Model: EC-3100-HG

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EC-3100-HG ChekPoint™ Electronic Faucet, deck mount, rigid gooseneck, vandal resistant aerator, AC/DC control module, mixing tee, hydro-generator power supply, includes optional 100-240 VAC adapter
2. Unit is specified and provided with Hydro Generator; no receptacle is needed to power the electronic sensor.

ITEM # D100.2 TOWEL/SOAP DISPENSER, SURFACE MOUNTED
Quantity: One (1)
Manufacturer: Bradley Corporation
Model: 1471-11

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 1471-11 Towel/Soap Dispenser, Surface Mounted
2. FSEC to VERIFY paper towel SIZES with owner BEFORE placing order and adjust dispenser model number, accordingly, as required to accommodate owner's standard facility paper towel size/fold.
3. FSEC to be responsible for providing and installing hollow masonry anchors and any other appropriate hardware to support dispenser on wall.
4. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
5. GC to furnish and install blocking in wall, as needed to support dispenser.
6. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.

ITEM # D400-D400.3 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

I. **PART 1 – GENERAL:**

- A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:
Item D400 – Front Counter
Item D400.1 – Wall Cabinets
Item D400.2 – Lights, LED
Item D400.3 – Pull-out Waste Basket, Single (Rev-A-Shelf, RV-35)
- B. **MANUFACTURER:**
Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com
- C. **SUBSTITUTIONS:**
Substitutions: no substitutions/alternate manufacturers shall be accepted.
- D. **CERTIFICATION:**
AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.
UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.
NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.
- E. **GENERAL CONDITIONS:**
Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.
- F. **RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDE BY OTHER TRADES:**
1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
 2. Rubber, vinyl, or other material for finishing cabinet toe kicks.
 3. Locks Master key to room doors and other special locks.
 4. Blocking within walls.
 5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.
- G. **DESIGN & SPECIFICATION:**
1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
 2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
 3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
 4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
 5. Casework shall be designed, fabricated, and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASCTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
 - (1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** Stained Wood Finish or P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.
8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs, and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.

4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED: FINISHED** - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR: APPLIED PANEL** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR: FINISHED** - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE: TOP STRETCHERS** or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER: FULL TOP** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE: FULL BOTTOM** with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER: FULL BOTTOM** with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS: FULL BACK** - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moisture barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer front selections.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **FLAT WOODEN:** Custom Design to be determined by client.
5. **PANELED WOOD:** Custom Design to be determined by client.
6. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.
7. **FRAME-ONLY GLASS:** Shall be 3/4 " thick frame, laminated both sides with HPL or be stained/painted veneer. Glass shall be clear acrylic and shall be retained in openings with removable glazing. Doors shall be available for both sliding and hinged designs. Custom Design to be determined by client.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. **FEATURES/OPTIONS/ACCESSORIES:**

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
3. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
4. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All locks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.
5. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
6. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
7. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
8. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.

9. **LED LIGHTS - WALL CABINETS:** All wall cabinets to be provided with SuperBrightLEDs Under Cabinet Light Strip Kit rated at 3000 kelvin temp generating 380 lumens/ft., housed in a L-TASK-12F LED Aluminum Channel with frosted styrene lens to diffuse light. Size lengths of LED lights based on width of cabinets. Installed below wall cabinet with light rail, daisy chained to single point connection. System to be complete with LED Controller, operation to be by single switch and remote control. Remote control to be secured inside a wall cabinet to prevent misplacement. Remote Control to provide dimmable operation. Electrical Contractor to provide receptacle for LED lights power adapter and switch installed in wall below wall cabinets. Millwork fabricator to provide LED lights and install in wall cabinets complete with all interconnections.
 10. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 ½" unless required by site conditions.
 11. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors, or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
 12. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
 13. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
 14. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering); Refer to architectural/interior design documents for finish selections and locations.
 15. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
 16. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
 17. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
 18. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations.
- K. EQUIPMENT INTEGRATION & PROTECTION:**
1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
 2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.

3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
 4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
 5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
 6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
 7. **AIR FLOW & VENTALATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.
- L. **COORDINATION:**
1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
 2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
 3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.
- M. **SUBMITTALS:**
1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
 2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
 3. Include MEP sheet if a part of the Scope.
 4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
 5. Submit samples of exposed material colors and hardware as requested by the architect/owner.
- N. **JOB CONDITIONS**
1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
 2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
 3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.

4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent, or excessive changes in temperature or humidity level over the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location, and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing, and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or FLOORS in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
13. Walls and Partitions (whether framed, demountable or masonry) must be in place.
14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
17. Elevator, hoist, or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.

O. INSTALLATION, QUALITY ASSURANCE AND WARRANTY:

1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
3. Install and trim millwork to walls, floors, ceiling, and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking, or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care, and maintenance of custom millwork.
7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # D500 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # D600 DUPLEX CONVENIENCE RECEPTACLE, BY EC
Quantity: One (1)
Manufacturer: BY EC
Model: BY EC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY EC Duplex Convenience Receptacle
2. Convenience receptacle to be provided by EC.
3. Shown whereas to not interfere with food service equipment. Provide additional dual convenience receptacle, as necessary.
4. E.C. to provide dedicated 15-amp service to each receptacle.
5. When in counter, E.C. to install in front apron. Junction box not to be visible to operator or interfere with cabinet storage.

COCKTAIL LOUNGE/BAR

ITEM # B100 WINE CELLAR CABINET
Quantity: One (1)
Manufacturer: True Mfg. – Residential
Model: TWC-24DZ-L-SG-B

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TWC-24DZ-L-SG-B Undercounter wine cabinet, one-section dual zone, 24"W, self-contained refrigeration, low-E double pane UV tinted glass door, barrel lock, TruLumina LED interior lighting, stainless steel interior and exterior, R134A Refrigerant, 115v/60/1-ph, 1.9 amps, NEMA 5-15P, cULus, Made in USA
2. One (1) 5-year compressor warranty, 3-year parts and labor warranty, standard
3. One (1) Stainless steel, standard
4. One (1) Model H04-STAINLESS (STD) Stainless Steel Standard Hardware handles, hinges, and logo
5. One (1) Side and Back finish: Galvanized steel, standard
6. One (1) Door Type: Glass with Stainless Steel Frame, standard
7. One (1) Door hinge location: Left, standard
8. One (1) Stainless Steel interior, standard
9. One (1) Shelving style: (5) glide out wine shelves & (1) floor cradle, standard
10. One (1) 14 color TruLumina, standard
11. One (1) Leg levelers, standard
12. Unit is to be installed on curb, Item #B117.
13. Finish: Powder Coat to match MW-A7/PT-7 w/ Brushed Brass/Bronze Door Handles

ITEM # B101 BACK BAR CABINET, REFRIGERATED
Quantity: One (1)
Manufacturer: True Mfg. – Premier Bar
Model: TBR48-RISZ1-L-S-GG-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TBR48-RISZ1-L-S-GG-1 Refrigerated Back Bar Cooler, two-section, 48"W, (76) 6-pack cans or (43) 6-pack bottles capacity, side mounted self-contained refrigeration, (2) hinged glass doors (locking), LED interior lighting, stainless steel countertop, stainless steel exterior, stainless steel interior (sides & floor), R290 Hydrocarbon refrigerant, 1/5 HP, 115v/60/1-ph, 1.8 amps, NEMA 5-15P, cULus, UL EPH Classified, Made in USA
2. One (1) NOTE: Commonly stocked model in stainless steel exterior; verify availability with factory
3. One (1) 115v/60/1-ph, NEMA 5-15P
4. One (1) Standard refrigerator (33°F-38°F/2°C)
5. One (1) 7-year compressor warranty, 3-year parts and labor warranty, standard
6. One (1) Self-contained refrigeration, standard
7. One (1) Leg levelers, standard (34-15/16" overall cabinet height)
8. One (1) Krowne No legs or casters
9. Unit is provided standard with locks.
10. Unit is to be installed on curb, Item #B117.
11. FSEC to verify Black or Stainless Finish before placing order.
12. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.
13. Finish: Powder Coat to match MW-A7/PT-7 w/ Brushed Brass/Bronze Door Handles

ITEM # B101.1 DRAFT BEER DISPENSING KIT
Quantity: One (1)
Manufacturer: Perlick Corporation
Model: 69526-4TTTF-R

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 69526-4TTTF-R Tee Tower Style Beer Dispensing Kit - (4) Faucets, Tarnish Free Brass (dispensing head, drainer, faucet(s), air distributors, beer line connectors, air hose, air distributor cover, beer & drain line covers, air scoop & tubing, air sleeve, spanner wrench, drainer tubing - 8', silicone, hardware & fittings) (NOTE: keg couplers sold separately), field installation kit
2. One (1) Note: Keg coupler not included in beer dispensing kits; must be ordered separately. Refer to the Perlick tapping price book or perlick.com
3. Four (4) Model 36000GS "D" System Keg Coupler, probe, less lock, stainless steel

ITEM # B102 WINE CELLAR CABINET
Quantity: One (1)
Manufacturer: True Mfg. – Residential
Model: TWC-24DZ-R-SG-B

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model TWC-24DZ-R-SG-B Undercounter wine cabinet, one-section dual zone, 24"W, self-contained refrigeration, low-E double pane UV tinted glass door, barrel lock, TruLumina LED interior lighting, stainless steel interior and exterior, R134A Refrigerant, 115v/60/1-ph, 1.9 amps, NEMA 5-15P, cULus, Made in USA
2. One (1) 5-year compressor warranty, 3-year parts and labor warranty, standard
3. One (1) Stainless steel, standard
4. One (1) Model H04-STAINLESS (STD) Stainless Steel Standard Hardware handles, hinges, and logo
5. One (1) Side and Back finish: Galvanized steel, standard
6. One (1) Door Type: Glass with Stainless Steel Frame, standard
7. One (1) Door hinge location: Right, standard
8. One (1) Stainless Steel interior, standard
9. One (1) Shelving style: (5) glide out wine shelves & (1) floor cradle, standard
10. One (1) 14 color TruLumina, standard
11. One (1) Leg levelers, standard
12. Unit is to be installed on curb, Item #B117.
13. Finish: Powder Coat to match MW-A7/PT-7 w/ Brushed Brass/Bronze Door Handles

ITEM # B103 MODULAR BAR DIE SYSTEM (29 FT.)
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KMB

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KMB Modular Bar Die System (29 Ft.)
2. Twenty-Nine (29) Model KMB Krowne Royal Modular Bar Die, built-in chaseways & removable panels, all pricing & layouts done by factory or sales representative (priced per foot)
3. Two (2) Model KMB-EC Electrical box only
4. Three (3) Model KMB-LK-W Light Kit, snap-in LED light, cool white, kit includes: (1) snap-in LED light, (1) stainless steel pre-punched wall plate, (1) 2" x 4" electrical box
5. One (1) Model KMB-PS-25 Power Supply, for KMB-LK light kits, 25 watts, powers up to (10) lights
6. One (1) Model KMB-LD Dimmer Control, for LED light kit
7. Twenty-Nine (29) Model KMB-MT Full size footprint template printed on mylar paper (priced per foot)
8. Three (3) Model KMB-PC Customer Side Panel Clips, millwork panel clips, 3/4" offset (24 pieces)
9. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.
10. Mylar template to be ordered prior to equipment going into production and is used to locate precise footprint of modular bar equipment. Template is to be included in pricing of equipment and is sent in sections labeled A thru Z for ease of layout. Template allows for accurate marking of floor drain locations and bee/vent lines along with the added benefit of spatially visualizing your future bar. Mylar sections can be sent in up to 200" in length.

ITEM # B104 UNDERBAR SINK UNITS
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR19-53C

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR19-53C Royal Series Underbar Sink Unit, three compartment, 60"W x 19"D, 10" wide x 14" front-to-back x 10" deep compartments, 12" embossed drainboards on left & right, splash mount Royal Series faucet with swing spout, apron on front & sides, (3) removable overflow standpipes, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model 21-443L Krowne Royal Series E-Z Install Water Line Kit, wall mount, 22" long
4. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B104.1 SPEED RAIL / RACK
Quantity: Two (2)
Manufacturer: Krowne Metal
Model: RS-30

Furnish and set-in place per manufacturer's standard specifications:

1. Two (2) Model RS-30 Royal Series Single Speed Rail, built-in, 30"W x 5"D, sound deadened bottom, stainless steel construction, NSF
2. Two (2) Model KR-SC30 Royal Series Speed Rail Locking Cover, single, 30"W, stainless steel construction
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B105 HAND SINK
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-12ST

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-12ST Royal Series Underbar Hand Sink Unit, free standing, 12"W x 24"D x 36-1/2"H.O.A. (to match speedrail depth), 10"W x 12"D front-to-back x 7" deep sink bowl, splash mount Royal Series faucet, built-in soap & towel dispenser, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model 21-443L Krowne Royal Series E-Z Install Water Line Kit, wall mount, 22" long
4. One (1) Model KR-CB12 12" Add-On Cabinet Base with Door
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B106 ICE BIN WITH BOTTLE WELLS
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR19-M36L-10

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR19-M36L-10 Royal Series Underbar Combination Ice Bin, ice bin with bottle well, 36"W x 19"D O.A., built-in 10-circuit cold plate, 24"W ice bin on left, 74 lbs. capacity, (1) 12"W insulated bottle storage with wire bottle racks unit on right, stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model SC24F Underbar Ice Bin Cover, full, for 24"W ice bin without bottle wells, stainless steel, NSF
4. One (1) Model KR-406 Royal faucet installed over ice bin; low lead compliant
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B106.1 SPEED RAIL / RACK
Quantity: One (1)
Manufacturer: Krowne Metal
Model: RS-36

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model RS-36 Royal Series Single Speed Rail, built-in, 36"W x 5"D, sound deadened bottom, stainless steel construction, NSF
2. One (1) Model KR-SC36 Royal Series Speed Rail Locking Cover, single, 36"W, stainless steel construction
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B107 BLENDER STATION
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-12BD

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-12BD Royal Series Underbar Blender Station, with dump sink, 12"W x 24"D x 36-1/2"H O.A. (to match speedrail depth), 7" deep sink bowl, splash mount Royal Series faucet, 9"D recessed blender shelf with utility box mounted underneath (GFCI receptacle required), stainless steel top, front, & sides, stainless steel legs with adjustable thermoplastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. One (1) Model 30-152 Perforated Drain Basket for Bar Sink, fits all 10" x 14" x 10" sink bowls, 5" deep, with stainless steel handles, stainless steel
4. One (1) Model 21-443L Krowne Royal Series E-Z Install Water Line Kit, wall mount, 22" long
5. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B108 BLENDER, BAR
Quantity: One (1)
Manufacturer: Waring
Model: MX1500TXP

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model MX1500TXP Xtreme High-Power Blender, heavy duty, The Raptor™ 48oz. BPA Free copolyester container, electronic membrane keypad, LCD display with blue backlight, (4) reprogrammable blending stations, sound enclosure, one-piece removable jar pad, 3.5 HP, 120v/50/60/1-ph, 13.0 amps, NSF, cETLus, Made in USA
2. One (1) Model CAC93X The Raptor™ Blender Container, 48 oz. capacity, clear, BPA Free, copolyester, stackable, includes: lid & blade (for Xtreme MX series blenders)
3. One (1) Model SE500 Sound Enclosure Kit, includes jar pad & screws, for all Xtreme MX Series blenders with 48 oz. containers (CAC93X)
4. One (1) Model CAC116 Blending Assembly & Retainer Ring Kit, for CAC93X & CAC95
5. One (1) Model CAC119 Retainer Ring Wrench, for CAC93X & CAC95, to remove blending assembly from container

ITEM # B109 METROMAX Q RACKS
Quantity: One (1)
Manufacturer: Metro
Model: LOT

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model LOT MetroMax Q Racks
2. Four (4) Model MQ74UPE MetroMax® Q™ Post, 73-3/16"H, for use with stem casters, epoxy coated steel with built in Microban® antimicrobial product protection, taupe
3. Two (2) Model 5PCXM Polymer Stem Caster, swivel, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
4. Two (2) Model 5PCBXM Polymer Stem Caster, brake, 5" dia., 1-1/4"W face, -20° F to 120°F temperature range, polyurethane wheel tread, 300 lb. capacity, Microban® antimicrobial product protection, NSF (donut bumpers included) (for use with all MetroMax posts & shelves)
5. Three (3) Model MQ2448G MetroMax® Q™ Shelf, 48"W x 24"D, removable open grid polymer shelf mats on an epoxy coated steel frame with quick adjust corner releases, (4) wedge connectors, Microban® antimicrobial product protection, 800 lb. capacity per shelf, NSF
6. One (1) Model MX2448F MetroMax® i Shelf, 48"W x 24"D, reinforced type 304 stainless steel corners, removable one-piece solid polymer shelf mat, (4) wedge connectors, built in Microban® antimicrobial product protection, 1000 lb. capacity per shelf, NSF
7. FSEC to Assemble into four tier high shelving units, locate shelves with SOLID mat inserts at bottom. Bottom shelf to be minimum of 12" above floor.
8. FSEC to verify all shelving sizing prior to ordering due to any field conditions/alterations.

ITEM # B110 UNDERBAR SODA GUN HOLDER
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-6SH

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-6SH Royal Series Underbar Soda Gun Holder, 6"W x 24"D, fits all Wunder-Bar® & Schroeder® soda guns & manifolds, removable cover, includes drip cup, stainless steel top, front, & sides, NSF
2. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B111 SPARE NO.

ITEM # B112 ICE MAKER WITH BIN, CUBE-STYLE
Quantity: One (1)
Manufacturer: Scotsman
Model: CU0415MA-1

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CU0415MA-1 Undercounter Ice Maker With Bin, cube style, air cooled, 15" width, self-contained condenser, production capacity up to 58 lb./24 hours at 70°/50° (38 lb. certified at 90°/70°), 36 lb. bin storage capacity, clear medium cube, horizontal evaporator, ADA compliant with floor mount kit, no side clearance required, unit specific QR code, 6" legs included, ice scoop included, R-134a refrigerant, includes power cord with NEMA 5-15P plug, 115V/60/1-ph, 3.6 amps, cETLus, ETL-Sanitation, CE, engineered and assembled in USA
2. One (1) 3-year parts & labor warranties
3. One (1) Model KUFM15 Undercounter Floor Mount Kit, fits under ADA 34" countertops by reducing height to 31.9"
4. Plumbing Contractor to extend drain lines to Floor Sink for indirect waste requirements.

ITEM # B112.1 WATER FILTER SYSTEM, ICE
Quantity: One (1)
Manufacturer: Everpure
Model: EV932421

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model EV932421 Insurice® Single PF-i2000² System, with prefilter, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron precoat filtration, for cubers up to 750 lbs./day or flakers up to 1,500 lbs./day, pressure gauge, flushing valve, NSF, ANSI
2. One (1) Model EV961222 Everpure® i2000² Replacement Cartridge, 9,000-gallon capacity, 1.67 gpm flow rate, 0.5-micron rating, chlorine taste & odor reduction, scale inhibitor, cyst reduction 35-100° F temperature, 10-125 PSI non-shock required, ANSI, NSF
3. One (1) Model EV953426 Everpure® EC210 Prefilter Cartridge, fits most 20" drop-in housings, 10-micron rating for high sediment areas (6 each per case)
4. Plumbing Contractor to install water filter system in water supply line and furnish and install interconnecting hard copper piping between water filter and equipment water inlet. Water Filter provided by FSEC.
5. FSEC to furnish proper type of stainless-steel mounting hardware for wall construction to sustain weight while in use.
6. GC to install wall blocking as required for mounting. FSEC to indicate blocking locations in walls, on blocking sheet of shop drawings.
7. Refer to wall blocking detail WBK-100 for additional wall blocking information and mounting heights. FSEC to provide a dimensioned wall blocking sheet as part of submittal/shop drawing package.
8. Install filter as per elevations on food service drawings.
9. FSEC to provide a sticker and date of installation on filter cartridges.
10. Water filter overflow tube to be extend to nearest floor sink with 1" air gap
11. For more information see filter installation detail MEP-101.

ITEM # B112.2 ICE MAKER, PARTS & ACCESSORIES
Quantity: One (1)
Manufacturer: Scotsman
Model: KUFM15

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KUFM15 Undercounter Floor Mount Kit, fits under ADA 34" countertops by reducing height to 31.9"
2. Included with item #B112.

ITEM # B113 GLASS RACK
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-GSB3

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-GSB3 Royal Series Underbar Glass Rack Storage Unit, drainboard top, 24"W x 24"D, open front cabinet base with intermediate shelf, (2) 20" x 20" glass racks, embossed top includes 1" drain, stainless steel top, front, & sides, stainless steel legs with adjustable grey plastic bullet feet, NSF
2. One (1) 6-1/2" High Backsplash, standard
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B114 UNDERBAR ADD-ON UNIT
Quantity: One (1)
Manufacturer: Krowne Metal
Model: KR24-T12

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model KR24-T12 Royal Series Underbar Trash Station, 12"W x 24"D (to match speedrail), opening in top for trash disposal, fits slim jim (up to 30" high), lift-up front door, stainless steel front & sides, no legs, NSF
2. One (1) Model SJ-TC Trash Can, gray, 23-gallon, 30"H x 11"W x 20"D
3. The bar is an engineered system; Refer to spec drawings for details, options, features, heights, etc. If there are any conflicts between the two, a formal RFI is to be submitted for clarification.

ITEM # B115 ICE & WATER DISPENSER
Quantity: One (1)
Manufacturer: Delfield
Model: 204

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 204 Ice & Water Unit, Drop-In, single service, glass filler, insulated ice chest, 45-pound ice storage capacity, chrome plated wire strainer, lift-off cover with handle, stainless steel top, galvanized steel exterior tank, (21" x 17-3/4" cutout required), NSF
2. One (1) Model 046000N 1-year parts & labor warranty, standard
3. Drain to be indirect to the nearest floor sink, piping, and connection by PC.
4. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
5. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # B116 ICE & WATER DISPENSER
Quantity: One (1)
Manufacturer: Delfield
Model: 204

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model 204 Ice & Water Unit, Drop-In, single service, glass filler, insulated ice chest, 45-pound ice storage capacity, chrome plated wire strainer, lift-off cover with handle, stainless steel top, galvanized steel exterior tank, (21" x 17-3/4" cutout required), NSF
2. One (1) Model 0460000N 1-year parts & labor warranty, standard
3. Drain to be indirect to the nearest floor sink, piping, and connection by PC.
4. FSEC is responsible for verifying that space available in field will accommodate units and for verifying that it will interface properly with all associated and adjacent equipment.
5. FSEC is responsible for coordinating with millwork shop drawings and associated equipment.

ITEM # B117 S/S CURB
Quantity: One (1)
Manufacturer: Eagle Group
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM S/S Curb
2. Custom S/S Curb size and shape as shown on drawing. This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service contract documents.
3. Refer to detail #FAB-30.

ITEM # B300 BAG-N-BOX SYSTEM, By Vendor
Quantity: One (1)
Manufacturer: By Vendor
Model: BY VENDOR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Bag-N-Box System
2. Refer to Item #B301, Soda Gun, for installation notes.
3. Electrical Contractor to provide standard 20-amp receptacle at location.
4. Refer to Beverage Conduit Installation Detail MEP-401 on Typical Installation Detail Sheet.

ITEM # B301 SODA GUN SYSTEM, 8-14 BUTTON, By Vendor
Quantity: One (1)
Manufacturer: By Vendor
Model: BY VENDOR

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY VENDOR Soda Gun System, 8-14 Button
2. FSEC to verify routing and destination with vendor and all applicable trades and coordinate.
3. Soda Vendor to provide a complete and operational soda delivery system that will adequately handle the soda dispensers as indicated in this specification section.
4. Soda Vendor to provide and install all lines, pumps, gauges, dispensing units, carbonators, racks, product, and miscellaneous parts. Coordinate with Food Service Director on site.
5. Soda Vendor to verify location and type of carbonators prior to installation.
6. GC to provide and install 6" PVC conduit for the soda lines. Location to be verified with the design team.
7. Placement of the soda line conduits are critical. Every effort shall be made to locate penetrations, so they are concealed but accessible. All applicable contractors are to coordinate conduit locations with the project manager on site.
8. Millwork fabricator to provide soda line chase and counter cut-outs in beverage counter if required. Millwork fabricator to coordinate with soda Vendor.
9. FSEC to coordinate all specifications and installation of systems in advance of close-in and fabrication with the project manager, equipment fabricators, GC, and food service consultant.

ITEM # B400-B405 FOOD SERVICE MILLWORK PACKAGE:
Quantity: One (1)
Manufacturer: CraftPoint Concepts
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

- I. **PART 1 – GENERAL:**
 - A. **FOOD SERVICE MILLWORK PACKAGE:** This is a custom fabricated item and is to be constructed as described in General Specifications and as further detailed on Food Service Contract Documents. Refer to architectural/interior design documents for finish selections and locations. Provide with all options, accessories and features as listed below. To include the following items:
 - Item B400 – Back Bar
 - Item B401 – Front Counter
 - Item B402 – Server Station
 - Item B403 – Server Station
 - Item B404 – Server Station
 - Item B405 – Server Station
 - B. **MANUFACTURER:**
Fabrication and installation of custom casework/millwork shall be provided by:
CraftPoint Concepts, 300 W Chestnut St, Ste 301, Ephrata, PA 17522
Phone: (717)283-4325
Email: quotes@craftpointconcepts.com
 - C. **SUBSTITUTIONS:**
Substitutions: no substitutions/alternate manufacturers shall be accepted.

D. CERTIFICATION:

AWI: Millwork shall be fabricated to AWI standards and millwork fabricator to be AWI member and QCP Certified. QCP Certification is critical for this type of millwork and required as there is significant amount of integration details with equipment.

UL: Millwork shall be UL listed for all integrated wiring and load centers. Shop drawings are to list UL number. Equipment to be labeled with UL listing number.

NSF: Millwork shall be NSF listed and certified. Shop drawings are to list NSF number. Equipment to be labeled with NSF listing.

E. GENERAL CONDITIONS:

Refer to The General Conditions section 11 40 02, and Execution section 11 40 05 for additional requirements of this section.

F. RELATED WORK SPECIFIED ELSEWHERE TO BE PROVIDED BY OTHER TRADES:

1. General architectural millwork and custom cabinetry unless specified herein or so noted on the project plans.
2. Rubber, vinyl, or other material for finishing cabinet toe kicks.
3. Locks Master key to room doors and other special locks.
4. Blocking within walls.
5. Sinks, plumbing fixtures, electrical and mechanical equipment of all types, food service equipment and the related installation and service connections thereof.

G. DESIGN & SPECIFICATION:

1. For sizes and functions of counters, refer to Food Service Design Documents consisting of elevations, sections, 3D illustrations, typical installation details and finish schedules.
2. All casework under this Section shall be the product of and supplied under the direction one manufacturer as specified in Section 3 of this part to eliminate incompatible items.
3. The Drawings and Specifications outline the design intent and the general requirements of casework for the project. Construction details and specifications for casework are not complete, and casework furnished shall be completed for the intended use.
4. The Drawings and Specification indicate requirements which may differ from manufacturer's standard product. Make all modifications necessary to comply with the requirements.
5. Casework shall be designed, fabricated, and installed to meet the "Premium Grade" quality standards established in the latest edition of "Architectural Woodwork Standards" of the American Woodwork Institute (AWI) and manufacturer is to be AWI member.

II. PART 2 – PRODUCTS:

A. MATERIALS & FINISHES:

1. **GENERAL:** All casework shall comply with Premium Grade, as defined by AWI, unless otherwise specified or shown on Drawings.
2. **LAMINATED PLASTICS/FINISHES:** High pressure decorative plastic laminate (HDPL) and vertical grade (.032) for exterior cabinet surfaces shall meet NEMA standards for vertical grade. HDPL for countertops shall be general purpose grade (.050).
3. **SUBSTRATE (CORE) MATERIAL:** Exterior grade plywood 18MM (3/4") 13 ply Baltic Birch glued with urea adhesive. Melamine, Particle Board or MDF are not acceptable for food service millwork.
4. **EDGING:** Solid, high impact, homogeneous color polyvinyl chloride (PVC), applied by high speed edge bander with hot melt adhesive and automatically trimmed all edges for consistent, uniform appearance. HPL to match produce top surface is also acceptable.
5. **HARDWARE:**
(1) **See PART 3 for hardware specifications.**
6. **EXTERIOR:** Stained Wood Finish or P-LAM on all exposed surfaces as per elevations/sections and finish schedule listed on Food Service Design Documents. Finishes to comply with AWI standards. Millwork fabricator to provide pro-industrial water based catalyzed epoxy on all painted finishes. Refer to architectural/interior design documents for finish selections and locations.
7. **INTERIOR:** Interior of cabinets/storage area to be black p-lam finish. Finishes to comply with AWI standards.

8. **ACCENT:** Plate pockets and/or framed accents to receive backer board and tile finish as per elevations/sections and finish schedule listed on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.

B. CABINET SURFACE TERMINOLOGY:

1. **EXPOSED EXTERIOR (Per AWI STANDARDS 10.1.5.2):** All exterior surfaces exposed to view to include:
 - (1) All surfaces visible when doors and drawers are closed including knee spaces
 - (2) Underside of cabinet bottoms over 42" AFF, including cabinet bottoms behind light valances and the bottom end of light valances.
 - (3) Cabinet tops under 80" above the finished floor, or if 80" and over and visible from an upper building level or floor.
 - (4) Front edges of stretchers, end, divisions, tops, and bottoms.
 - (5) Sloping tops of cabinets that are visible.
2. **EXPOSED INTERIOR (Per AWI STANDARDS 10.1.5.3):** All surfaces defined as all interior surfaces exposed to view in open casework or behind transparent doors, including:
 - (1) Shelves, including edgebanding.
 - (2) Divisions and partitions (front edge is an exposed surface).
 - (3) Interior face of ends (sides), backs, and bottoms (including pull outs). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Interior face of door and applied drawer fronts.
3. **SEMI-EXPOSED (Per AWI STANDARDS 10.1.5.4):** Defined as those interior surfaces only exposed to view when doors or drawers are opened, include:
 - (1) Tops and bottoms of shelves, including front edgebanding (front edge is an exposed surface)
 - (2) Divisions and partitions (front edge is an exposed surface)
 - (3) Interior face of ends (sides), backs and bottoms (including a bank of drawers). Also included are the interior surfaces of cabinet top members 36" or more above the finished floor.
 - (4) Drawer sides, sub fronts, backs, and bottoms.
 - (5) The underside of cabinet bottoms between 24" and 42" above the finished floor.
 - (6) Security and dust panels or drawer stretchers.
4. **CONCEALED (Per AWI STANDARDS 10.1.5.5):** Surfaces defined as those exterior or interior surfaces that are covered or not normally exposed to view, include:
 - (1) Toe space unless otherwise specified.
 - (2) Sleepers, stretchers, and solid sub tops.
 - (3) The underside of cabinet bottoms less than 24" above the finished floor.
 - (4) The flat tops of cabinets 80" or more above the finished floor, except if visible from an upper floor or building level.
 - (5) The three non-visible edges of adjustable shelves.
 - (6) The underside of countertops, knee spaces, aprons and drawer boxes that are less than 36" above the finished floor.
 - (7) The faces of cabinet ends of adjoining units that butt together.

C. FACE FRAME AND FRAMELESS CONSTRUCTION:

1. **FRAMLESS CONSTRUCTION:** Also known as "European Style" or "32mm Standard" is where the front edge of the cabinet body is edgebanded and no front face panel is present. All doors are attached to the cabinet sides

III. PART 3 - DETAILED CABINET CONSTRUCTION REQUIREMENTS

A. CABINET BOX:

1. **CONSTRUCTION:** Premium qualified blind dado/ Glue and screw panel joinery
2. **MATERIAL:** 18mm (3/4") Baltic Birch plywood, NO added formaldehyde, Exterior glue, BB/CP industrial grade (HPL layer on face and back surface to balance material and avoid warpage)
3. **CONCEALED INTERIOR:** 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black
4. **FACE EDGE BANDING:** 0.032" HPL Decorative, Vertical grade exterior finish/color to be specified by finish schedule

B. END PANELS:

1. **CONCEALED:** FINISHED - 0.032" HPL Cabinet liner, Vertical Grade Frosty White or Black (assembly screws and other structural hardware exposed until final installation performance)
2. **EXPOSED EXTERIOR:** APPLIED PANEL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative, Vertical grade, applied to the side after cabinet box assembled (1/2" x 1/2" SS protective guard on exposed corner)
3. **SEMI-EXPOSED EXTERIOR:** FINISHED - 0.032" HPL Decorative, Vertical grade, directly applied to the side after cabinet box assembled; to be specified by finish schedule

C. TOP:

1. **BASE:** TOP STRETCHERS or FULL TOP when required for equipment or C-top support - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL TOP - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

D. BOTTOM:

1. **BASE:** FULL BOTTOM with 3/4" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **UPPER:** FULL BOTTOM with 1-1/2" LIGHT RAIL - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges

E. BACK:

1. **BASE & UPPER CABINETS:** FULL BACK - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges
2. **EXPOSED EXTERIOR:** 0.032" HPL Decorative/finishes to match exterior finish/ to be specified by finish schedule

F. TOE BASE:

1. **PLYWOOD BASE:** DETACHED and ADJUSTABLE PLATFORM - 18mm (3/4") Baltic Birch plywood core with Decorative finished toe board per client's selection. Metal adjustable levelers to keep base off the floor for moister barrier, rated to withstand total weight of casework, C-top and integrated equipment. Standard selection will be used if not specified otherwise.
2. **OPTION SELECTION:** Shall be listed on the shop drawings cover sheet with finishes.

G. PULLOUTS:

1. **DRAWER BOX:** 12mm (5/8") Baltic Birch plywood core 0.032" HPL Cabinet liner on both sides and exposed edges. Undermount glides with integrates Soft-close mechanism
2. **TRASH UNIT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair
3. **EQUIPMENT INTEGRATED PULL-OUT:** 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides and exposed edges. Self-closing, Full Extension Side mount glides, 150lb load capacity per pair.

H. DOORS AND DRAWER HEADS:

1. **DOOR/DRAWER FRONTS:** Door and drawer fronts shall be fabricated from an 3/4" particleboard or MDF core laminated on both faces with HPL. To avoid warping, plywood core shall not be used. Doors and drawer fronts shall overlay the cabinet body and establish a 1/8" reveal between pairs of doors, doors and drawer fronts, and multiple drawer fronts on the same cabinet. Refer to architectural/interior design documents for door/drawer front selections.
2. **STANDARD FLAT PLAM:** 3/4" Engineered substrate with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection.
3. **PANELED PLAM:** Custom Design to be determined by client.
4. **FLAT WOODEN:** Custom Design to be determined by client.
5. **PANELED WOOD:** Custom Design to be determined by client.
6. **VENTILATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Mesh panel to be sandwiched between face frame and retainage molding. Interior to be fully laminated as one piece with interior HPL.
7. **FRAME-ONLY GLASS:** Shall be 3/4 " thick frame, laminated both sides with HPL or be stained/painted veneer. Glass shall be clear acrylic and shall be retained in openings with removable glazing. Doors shall be available for both sliding and hinged designs. Custom Design to be determined by client.

I. CONSTRUCTION – COUNTERTOP:

1. Countertops to be 3cm engineered stone. Backsplashes where applicable to be 2cm engineered stone. In instances where back wall tile is specified, back splash to be omitted. Refer to elevations on Food Service Design Documents. Refer to architectural/interior design documents for finish selections and locations.
2. Stone cut-outs for drop-ins to have round corners to prevent stone from cracking and corners to be re-enforced with double layer substrate. Refer to recommended typical installation details on details sheet of Food Service Design Documents for countertop protection from heat to prevent cracking.
3. At locations where sneeze guards will penetrate the top, provide double substrate 6"x6" exterior grade plywood block to reinforce Below Counter Mounting of Heavy-Duty Flange. Provide nylon grommet for each post where post interfaces with countertop
4. Countertop to have 2" overhang on front edge and have 1/2" overhang at ends that are next to adjacent equipment, display cases, etc.
5. **COUNTERTOP SUPPORT BRACKETS:** Where required for counter overhangs, use A&M Hardware CFLAT12 Bracket for standard counter overhangs. Use ECFLAT12 Bracket for overhangs that have a transaction top behind allowing the additional protrusion support.

J. FEATURES/OPTIONS/ACCESSORIES:

1. **DOOR HINGES – CABINET:** Blum Clip-top Concealed, 107-degree Full overlay hinge with Integrated Soft-close. Opening restriction stop (integrated or cable) and Quiet Bumpers will be used as needed. Provide two (2) per door, provide three (3) if door height exceeds 36" height.
2. **DOOR PULLS:** Front of house – 6" standard bar pull & Back of house – 2" standard edge pull, Brushed aluminum/nickel finish. Unless other decorative hardware specified by client (all final selections are listed on Cover Sheet)
3. **PULL-OUT GLIDES:** UNDERMOUNT – Blum 563 series with Soft-close SIDEMOUNT - Accuride 3634EC series with Soft-close (150lb load capacity) and Accuride 7957 series Heavy-duty (350lb load capacity) per weight requirements.
4. **LOCKS – CABINETS:** CompX CAM disc tumbler with removable core locks with Latches on pair doors. All looks will be provided keyed alike, unless otherwise specified by client. Locks to be provided with elbow catch or strike plate. Do not notch cabinet creating a slot for lock pin.

5. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-in, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail MWK-300. Switch, control enclosure and interconnection by millwork fabricator of counter.
6. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
7. **HOOKS/WIRE BASKETS:** All accessories of hooks and wire baskets as shown in elevations and sections of millwork is to be provided
- 8.
9. **SHELVING:**
 - (1) **CONCEALED:** ADJUSTABLE - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Cabinet liner on both sides, Vertical Grade Frosty White or Black. 1mm PVC edge banding on ALL edges, color to match Cabinet liner. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 3 positions per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements. Wall Cabinets to be provided with 2 adjustable shelves, base cabinets to be provided with one adjustable shelf, spacing allowing with 12 inches between.
 - (2) **EXPOSED INTERIOR:** ADJUSTABLE or FIXED - 18mm (3/4") Baltic Birch plywood core with 0.032" HPL Decorative on both sides and exposed edges. Color coordinated with the finish/color of material selection. Supported by "Spoon" type metal shelf pins and line boring on the sides, adjustable in 32mm (1-1/4") increments, or client selected decorative supports.
 - (3) **SHELVING SUPPORT PIN HOLES:** are to be drilled using a 32mm hole drilling via computer-controlled point-to-point machines for ensured uniformity and consistency. Provide shelf pins for all shelving capable of supporting 150lbs. 3 positions are to be provided per cabinet section. No exposed holes/slots to be left open, each whole is to be covered as per NSF requirements.
10. **FILLERS:** Fillers shall be provided and scribed to walls and other adjoining surfaces. Same material as in cabinet construction shall be used. Filler thickness not to exceed 1 1/2" unless required by site conditions.
11. **REMOVABLE ACCESS:** All integrated equipment shall be accessible for service via removable panels, doors, or removable casework sections. Removable panels to be provided with finger slot holes and countersunk screws. All edges to be rounded and sealed - DO NOT caulk removable panels.
12. **FLOOR SINKS:** Stainless steel sleeves extending to the floor shall be used for all floor sinks located beneath casework.
13. **CORNER GUARDS:** 22 gage stainless steel corners shall cover all outside corners of casework bases.
14. **DECORATIVE MATERIALS:** Custom TBD (Tile, Acrylic, Special film or vinyl covering); Refer to architectural/interior design documents for finish selections and locations.
15. **TRASH RECEPTACLES:** All trash receptacles to feature stainless steel ring covering the circular cut out. Trash receptacles construction materials and assembly to match the rest of casework.
16. **FASTENERS:** Screws, Hidden brackets, Z-clips are as required by custom design and to be indicated on shop drawings. Exposed fasteners are not allowed, (interior or exterior of the cabinet), and or countersinking or using "stickers" to conceal fasteners. Cabinet construction, assembly and use of fasteners to be done before finishes are applied to the cabinet
17. **INTEGRATED ACCESSORIES:** Pullouts, Wine are TBD by client; Refer to architectural/interior design documents for finish selections and locations.

18. **TRIM:** Crown molding design, Baseboards, etc. are TBD by client; Refer to architectural/interior design documents for finish selections and locations.

K. EQUIPMENT INTEGRATION & PROTECTION:

1. Furnish finished openings through countertop and base where needed to accommodate utility lines, floor receptacles, and provide black plastic grommets where required. Any utility line cut-outs done in the field by other trades shall be neatly done and all exposed surfaces created by cuts to be grommet covered or painted by contractor making such field modifications.
2. **GROMMETS-CUTOUT/OPENINGS:** Provide 2.5" black grommets for countertop equipment. Grommet locations to be confirmed onsite with Food Service Director before installation. Large cutouts for trash or bussing access with no grommets should have substrate step back 2" larger than the cutout opening to prevent visibility of substrate material. Edge of substrate should be sealed.
 - (1) Provide angle iron supports around long drop-in cut-outs and heavy countertop equipment extending to base of cabinet or floor as required to sustain weight.
 - (2) All drop-in heated equipment is to be isolated from casework components via Nomex® heat tape and ¼" air gap.
3. **CONTROLS:** Controls to be mounted in millwork counter apron. In instances where depth will interfere with drop-ins, apron to be extended lower to allow clearance for controls. Separate detached aprons or controls hanging below apron, behind or on side of cabinet will not be accepted. All Controls to be recessed in a control enclosure Component Hardware model #R73-1210/R73-1212. If larger equipment controls do not fit in these two standard recessed modules, use a Vollrath 30312 1/3 Pan. See Millwork Detail. Switch, control enclosure and interconnection by millwork fabricator of counter.
4. Provide Stainless Steel Corner Guards where equipment slides in at locations such as plate lowerators, refrigerators, hot boxes, etc.
5. **MOISTURE PROTECTION:** Provide sealed tight Stainless-Steel Paneling to protect cabinetry where moisture is present at locations such as under counter dish-machines.
6. **PROTECTIVE S/S SHEETS:** All casework surfaces exposed to heat from adjacent food service equipment is to be protected by 18 gage stainless steel sheets. All induction generators are to be contained in the stainless-steel enclosure shield.
7. **AIR FLOW & VENTALATION:** When ventilation is required, Millwork Fabricator to provide McNichols 16-gauge, 1614381648 perforated metal mesh or equal on doors. Air flow in food service custom millwork is a critical engineering component and extra care should be taken to ensure integrated equipment is vented properly or it will fail in a short period. Venting of food service millwork is the responsibility of the food service millwork fabricator. AC Infinity fans, models AI-CFD120BA to be utilized. All millwork fan systems should contain an intake and an exhaust fans. This is required to balance the static pressures between the inside and outside of the cabinet. Position fans near the top of the cabinet configured to exhaust out the warmer air and position fans near the bottom to pull in colder air. Refer to typical detail MWK-360 Cabinet Venting, shown for induction, but applicable for all conditions.

L. COORDINATION:

1. Coordinate work of this section with related work of other Sections as necessary to obtain proper installation of all items.
2. Verify site dimensions of casework/millwork locations at jobsite prior to fabrication.
3. It is the responsibility of the Electrical Contractor, in coordination with the Food Service Equipment Contractor, to make final interconnections within serving counter interior to junction boxes, outlets, etc., for equipment indicated, if required.

M. SUBMITTALS:

1. Submit in accordance with the General, Supplementary, and Special Conditions of the Specifications.
2. Submit Shop Drawings for approval showing materials, dimensions, cabinet-cut details, and equipment locations. Show size and locations of all cutouts. Indicate all manufacturer's standard components with catalog numbers and identify all materials and construction details of custom-fabricated items. Shop Drawings should meet all AWI requirements.
3. Include MEP sheet if a part of the Scope.
4. Include dimensioned countertop Layout sheet with Sneeze guard's location if applicable.
5. Submit samples of exposed material colors and hardware as requested by the architect/owner.

N. JOB CONDITIONS

1. Prior to delivery of millwork, building shall be completely enclosed, all wet work complete, and HVAC system operating and maintaining temperature and relative humidity at levels prescribed in Section 1.06.B of this part during the remainder of the construction period.
2. Per 2nd edition of "Architectural Woodwork Standards" of the AWI, job site relative humidity levels shall be maintained at the following levels (Ref Section 2, table 2-001):
 - (1) Most of US and Canada: 25-55%
 - (2) Damp Southern Coastal areas of the US: 43-70%
 - (3) Dry Southwestern US: 20-50%.
3. For proper curing of sealant and adhesives, and to prevent any material shrinks, interior building temperature is not to register below 65-degree F.
4. Interior building temperature is not to exceed 80-degree F to avoid undue drying of materials, subsequently causing structural fatigue and damage. Additionally, frequent, or excessive changes in temperature or humidity level over the course of the installation, or once millwork and equipment is installed, must be avoided to prevent damages.
5. General Contractor shall be responsible for millwork protection and for any damages caused to casework and cabinetry by other trades after installation. All casework warranty shall be considered waived should job conditions not meet requirements of this section.
6. Installation contractor to coordinate with plumbing, mechanical and electrical trades for proper sizing, location, and sequence of construction.
7. All cut-outs and holes for mechanical, plumbing, and electrical work shall be made at the project site by respective trades.
8. **STRUCTURAL MEMBERS**, grounds, in wall blocking, backing, furring, brackets, or other anchorage that becomes an integral part of the building's walls, floors, or ceilings, required for the installation of architectural woodwork is not furnished or installed by the architectural woodwork manufacturer or installer (AWI Standards 10.1.14.1). GC shall be responsible for providing such supports.
9. **WALL, CEILING**, and/or opening variations in excess of 1/4" (6.4 mm) or **FLOORS** in excess of 1/2" (12.7 mm) in 144" (3658 mm) of being plumb, level, flat, straight, square, or of the correct size are not acceptable for the installation of architectural woodwork, nor is it the responsibility of the installer to scribe or fit to tolerances in excess of such. (AWI Standards 10.1.14.2)
10. **TOE BASE HEIGHT VARIANCE** due to floor variations is not considered a defect. Casework is required to be installed level; shimming of the toe base, not to exceed 1/2" (12.7 mm), is acceptable. Floor variations exceeding 1/2" (12.7 mm) shall be corrected before cabinets are installed; however, correction of such is not the responsibility of the cabinet installer. (AWI Standards 10.1.14.12)
11. All overhead mechanical, electrical or plumbing rough-in work is to be complete prior to delivery of casework.
12. All overhead mechanical, electrical or plumbing rough-in work required along walls or service islands where casework and equipment is to be installed, should be complete prior to delivery materials and casework. Final connections are to be coordinated with casework manufacturer and installer.
13. Walls and Partitions (whether framed, demountable or masonry) must be in place.

14. Overhead soffits and ceiling grid (with or without acoustic tile) must be in place prior installation.
 15. Flooring required to be placed under casework and equipment, must be installed prior to millwork installation.
 16. Installation area is to be cleared of debris, construction materials, other trades' tools or any other obstructions and be broom swept.
 17. Elevator, hoist, or other means of delivering millwork/equipment to the floors above/below grade level is to be provided by General Contractor. Casework installation contractor is not responsible for carrying items up/down the stairs nor is expected to be equipped for such deliveries.
 18. Loading dock must be accessible or entry to the building adequate for unloading and available during scheduled delivery time.
- O. **INSTALLATION, QUALITY ASSURANCE AND WARRANTY:**
1. **Delivery:** Millwork shall not be delivered until painting and all overhead operations that can damage the product is complete in the spaces to receive casework.
 2. **Storage and Protection:** protect casework in transit. Store at jobsite in ventilated area not exposed to extreme temperature and humidity changes. Store in the same temperature and relative humidity environment as installation location for acclimation purposes. Do not store or install casework in building until all wet work is complete. Storage location shall be out of the way of other construction activities to prevent accidental damages.
 3. Install and trim millwork to walls, floors, ceiling, and adjoining equipment/millwork. Work shall be performed by factory installers only, NO EXCEPTIONS. Installation of millwork cannot be outsourced to a third-party installer. All installation work to be closely coordinated by FSEC.
 4. **Field Seams:** Countertop seam, base cabinet, tile finish, etc. – all seams to be staggered and should not line up avoiding evident field connections and gaps of long counters.
 5. **Installation Workmanship:** Erect casework straight, level, and plumb. Scribe and closely fit to adjacent work, cutting and fitting around all obstructions. Install all items complete and adjust all moving parts to operate freely. Leave all exposed surfaces clean and free of defects at time of final acceptance.
 6. **Guarantee:** All materials shall be guaranteed for a period of 1/3 year from defects in material and manufacturing workmanship.
 - (1) Three (3) years for all casework/cabinetry/millwork surfaces, acrylic panels, glass, tile, paint/stain finishes and other wood components from warping, delaminating, peeling, cracking, or failing to properly carry to weight of equipment.
 - (2) One (1) year for all solid surface, engineered stone and granites from discoloration, cracking and seam separation.
 - (3) One (1) year for all upholstery from rips, discoloration, seam separation and detachment from bearing millwork.
 - (4) All integrated venting equipment (fans, etc.) shall be limited in warranty to the duration provided by respective equipment manufacturer's warranty.
 - (5) Fabricator to provide a warranty letter stating above guarantee at the completion of project
 - (6) Fabricator to provide a service and care package detailing best practices for use, cleaning, care, and maintenance of custom millwork.
 7. **Site Cleanup:** Installation contractor to remove all debris associated with casework installation including cartons, packing, scraps, sawdust, and packaging materials.

ITEM # B500 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # B501 TRASH BIN, SLIM JIM, SMALLWARES
Quantity: One (1)
Manufacturer: Smallwares
Model: SMALLWARES

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model SMALLWARES Trash Bin, Slim Jim
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # B502 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # B503 POS SYSTEM, SMALLWARES
Quantity: One (1)
Manufacturer: Pioneer
Model: S-LINE II

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model S-LINE II POS System
2. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
3. Owner shall furnish and install this item, through his smallwares supplier.
4. Owner is responsible for verifying manufacturer, model number, size, and components.
5. Obtain specifications and verify required utilities for smallwares equipment from owner/operator.
6. Data requirements, if any, to be coordinated with owner, provided by Electrical Contractor.
7. Millwork fabricator to Provide 2.5" black grommets for POS equipment. Grommet locations to be confirmed onsite with Food Service Director.

ITEM # B504 ADDITIONAL SMALLWARES & ACCESSORIES, SMALLWARES
Quantity: One (1)
Manufacturer: PRO Marketplace
Model: CUSTOM

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model CUSTOM Additional Smallwares & Accessories
2. Smallwares planning: bring your project to the finish line by capturing any additional items, details and proper configuration as required for complete opening. There is select specialty equipment in the design that requires specialty smallwares for its full and proper operation beyond the 500 items already listed as provisions in the design. This might include but not limited to induction chafing dishes, inserts, pots/pans, utensils, etc. For best smallwares recommendations to complement equipment and design with guidance, SCOPOS Hospitality Group recommends contacting our smallwares partner, Becky Smith 717-283-8683 bsmith@cfse.biz PRO Marketplace. Becky and her group are familiar with SCOPOS designs and are able to guide, sample and implement best practices with opening packages for FOH (front of the house) and BOH (back of the house) solutions meeting your project needs and budgets. Opening order guidance, staging and consultation offered at no charge when purchasing package through PRO Marketplace.
3. This item is NOT IN KITCHEN EQUIPMENT CONTRACT and is shown on Plan with an item number for coordination and reference only.
4. Owner shall furnish and install this item, through his smallwares supplier.
5. Owner is responsible for verifying manufacturer, model number, size, and components.

ITEM # B700-B704 FLOOR SINK & A.F.D PACKAGE: BY PC
Quantity: One (1)
Manufacturer: BY PC
Model: BY PC

Furnish and set-in place per manufacturer's standard specifications:

1. One (1) Model BY PC To include the following items:
 Item #B700 – Floor Sink
 Item #B701 – Floor Sink
 Item #B702 – Floor Sink
 Item #B703 – Floor Sink
 Item #B704 – Area Floor Drain
2. Floor sinks to be sized and located by Engineers/PC.
3. Keep Floor Sink locations as shown on food service floor plan. Not to interfere with food service equipment, and or legs/casters. Floor sink to be accessible for cleaning.
4. Care should be taken not to locate floor sinks directly below equipment with electronic controls. Critical for combi ovens. Hot discharge and steam may cause damage to controls.
5. Millwork Fabricator to provide stainless steel Floor Sink Sleeve when in Millwork counter base installation.
6. Floor sink sleeve to be 1/2" larger than floor sink and be sealed to the floor.
7. NOTE: Floor sink needs to have full access for cleaning. Piping not to obstruct access and allow removal of grate.
8. See floor sink installation detail MEP-100 on typical installation sheet.
9. Area Floor Drain to be sized and located by Engineer/ PC.
10. Shown as where to not interfere with Food Service equipment and provide sufficient area drainage.
11. Floor to be slopped to A.F.D
12. Provide additional A.F.D as required.

END OF ITEMIZED SPECIFICATIONS

PART 11 40 05 - EXECUTION

5.1 DESCRIPTION AND PURPOSE OF THIS SECTION

- A.** This section is additional supplemental information to sections 01 70 00 "Execution and Closeout Requirements", to further define coordination and responsibilities of all parties involved with executing a Food Service Equipment project.
- B.** The proper sequence of coordination, communication, scheduling, installation, operation, and maintenance of foodservice equipment will help eliminate unnecessary service issues and will facilitate the professional completion of the project. By creating a sequence of work for this foodservice project involving proper process and defining expectations, responsibilities, and sequence upfront is critical for project success. SCOPOS Hospitality Group has created a "Dealer Resources & Process" workgroup site with all this information outlined in an easy-to-follow format with all exhibit template files for download. If you do not have access to the workgroup site yet, please submit request to info@scoposhg.com and you will be invited to the platform.
- C.** This section contains the following areas of coordination:
 - 1. Description and Purpose of this Section
 - 2. Responsibility Matrix
 - 3. Coordination of Responsibility
 - 4. Scheduling Lead Times and Delivery
 - 5. General Contractor Responsibilities
 - 6. Food Service Equipment Contractor Responsibilities
 - 7. Fire Protection System Contractor Responsibilities
 - 8. Millwork Fabricator Responsibilities
 - 9. Refrigeration Contractor Responsibilities
 - 10. Electrical Contractor Responsibilities
 - 11. Plumbing Contractor Responsibilities
 - 12. HVAC Contractor Responsibilities
 - 13. Storage and Delivery
 - 14. Site Inspection and Field Verification
 - 15. Installation
 - 16. Protection
 - 17. Project Closeout Procedures
 - 18. Project Record Documents
 - 19. Warranties
 - 20. Exhibits

5.2 RESPONSIBILITY MATRIX
Food Service Specification/Design Responsibility

TRADE	FOOD SERVICE CONTRACTOR SPEC SECTION 11 40 00		ELECTRICAL CONTRACTOR SPEC SECTION 26 00 00		PLUMBING CONTRACTOR SPEC SECTION 22 00 00		MECHANICAL CONTRACTOR SPEC SECTION 23 00 00		GENERAL CONTRACTOR SPEC SECTION 01 00 00		BY OWNER	
	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL	FURNISH	INSTALL
ACTIVITY												
FOOD SERVICE EQUIPMENT												
Furnish of Specified Equipment (unless otherwise noted, i.e., by owner, by vendor, etc.)	X	X										
Installation - Deliver, uncrate, and set-in place equipment	X	X										
All floor, wall, roof penetrations, sleeving, and fireproofing/insulating/resealing necessary for the performance of your work.									X	X		
Start-up, testing, and calibrating equipment	X	X										
Owner training of equipment - videotaping not included	X	X										
Demolition of Kitchen Equipment (if required - provide additional quote)	X	X										
Refurbishing of Kitchen Equipment (if required - provide additional quote)	X	X										
Modification of Kitchen Equipment (if required - provide additional quote)	X	X										
Sneeze Guards, Furnished by FSEC, Installed by MWC	X	X										
Trim and Seal Foodservice Equipment	X	X										
Liquor Dispensing & Beer System (if required)	X	X										
Provide Warranty Letter and Certification	X	X										
Provide Service Agency Listing and Equipment Catalogue Record	X	X										
FOOD SERVICE GRADE MILLWORK												
Millwork contractor is a sub to Food Service Equipment Contractor	X	X										
Millwork associated with foodservice equipment	X	X										
Engineered Stone associated with foodservice equipment	X	X										
Millwork Shop Drawings, CAD/BIM Level	X	X										
Pre-fit and Install drop-ins at factory	X	X										
Provide Grommets and holes for countertop equipment	X	X										
Seal all exposed raw wood surfaces and trim/seal/caulk millwork to walls	X	X										
All apron mounted receptacles and switches in pre-wired millwork	X	X										
Tile work on millwork accents - match same batches with flooring contractor	X	X										
LED Lighting in millwork counters	X	X										
LED Lighting in millwork counters - Wiring and Light Switch			X	X								
Load Centers in prewired millwork counters	X			X								
ELECTRICAL												
All final electrical connections to equipment from building services			X	X								
All control wiring			X	X								
Interwiring complete for serving counters			X	X								
Electrical safety disconnects as required			X	X								
Electrical Load Centers and/or Panelboards per bid documents			X	X								
All wall mounted electrical receptacles			X	X								
Provide all DCR's shown on foodservice rough-in drawings.			X	X								
Wire provided table limit switch in clean dish table.			X	X								
Low voltage data wiring from POS to manager's office and digital menu boards.			X	X								
Low Voltage wiring of alarm systems to building system.			X	X								
Interconnections of electrical feeds within foodservice equipment that were disconnected for shipping purposes	X	X										
PLUMBING												
Interconnections of plumbing feeds within foodservice equipment that were disconnected for shipping purposes	X	X										
All final Plumbing connections to equipment from building services					X	X						
Indirect waste lines extended from interconnected equipment to drain locations					X	X						
Hand sinks - as noted on foodservice documents	X					X						
Sink faucets/pre-rinse spray assemblies	X					X						
Overflows	X					X						
Lever waste fittings	X					X						
Provide all plumbing materials including pipe, traps, stops, valves, gauges, unions, and insulation.					X	X						
Flexible quick disconnect gas hoses for mobile equipment	X					X						
Flexible quick disconnect water hoses for mobile equipment	X					X						
Appliance gas pressure regulator for main feed to equipment	X					X						
Backflow preventers					X	X						
Beverage 6" PVC Raceway and Conduits (if required)					X	X						
Provide 3-inch PVC Refrigeration Piping Raceway and Conduits					X	X						
Floor Sinks, Area Floor Drains & Standpipes - 700 Series Tags on equipment schedule					X	X						
Floor troughs - Connections	X					X						
Floor troughs - grouting and backfill	X									X		
Provide all grease interceptors and grease traps					X	X						
HOODS												
Exhaust Hood and pre-piping in factory for fire protection system	X	X										
Duct work and duct connections at hood collars, grease & condensate							X	X				
Exhaust Fan, Make-Up Fan							X	X				
Fan starters and/or relays from Exhaust/Make-Up fans to control points.							X	X				
Interwire heat detectors and T-Stats to control panel			X	X								
Control wiring from fan starters to hood fan controls including EMS and VFD's			X	X								
Inter-connecting light circuits at field joints			X	X								
Final electrical connections to lights			X	X								
Light fixtures	X			X								
Light bulbs			X	X								
Provide wiring to all lights/switches in exhaust hoods.			X	X								
Air balancing							X	X				
Permits to hang hoods (if required) Fee is extra	X	X										
Closure panels to finished ceiling	X	X										
Structural engineering or hanging structure									X	X		
Balance system to prevent any cross drafts and negative pressure							X	X				

FIRE SUPPRESSION SYSTEMS										
Complete Fire Protection System, Ansul/RangeGuard	X	X								
Fire protection contractor is a sub to Food Service Equipment Contractor	X	X								
Tanks and control heads	X	X								
Permit, testing, certification	X	X								
Chemical piping from hood to ottoman	X	X								
Gas shut-off valve	X						X			
Resets for electrical gas valve (When Specified)	X				X					
N.O./N.C. Contactors for fan sequencing and or fire alarm interface (contactors supplied as part of ottoman only)	X	X								
All electrical wiring as required to interconnect ottoman, gas shut-off valves, resets, building alarms, shunt trip circuits, fan controls/sequencing as required				X	X					
Shunt trip breakers				X	X					
WALK-IN BOXES, COOLER/FREEZER										
Wall, ceiling, and floor panel assemblies	X	X								
Installation permit if required	X									
Prefabrication floor panels - recessed in slab	X	X								
Light fixtures	X				X					
Light bulbs	X				X					
All electrical wiring and interwiring to door assembly control interface panel and light fixtures				X	X					
All wiring to heated pressure relief vents				X	X					
All penetrations through wall panels and ceiling panels for required to complete your work - see detail WIB-501				X	X	X	X			
Ceiling closure panels and wall trim - see detail WIB-101	X	X								
Insulation of Piping with heat tape in Walk-In Freezer section - see detail WIB-100	X	X								
Receptacle for heat tape plug-in				X	X					
Low Voltage wiring to remote monitoring stations for temperature alarms				X	X					
Drain lines from coils to floor sinks - see detail WIB-100						X	X			
REMOTE REFRIGERATION										
Refrigeration contractor is a sub to Food Service Equipment Contractor	X	X								
Submit shop drawing of rack system and piping diagram of installation runs	X	X								
Mount refrigeration unit on curb	X	X								
Roof pads/Exterior Concrete floor pads and penetrations								X	X	
Evaporator coils and condensing units	X	X								
Drain lines from coils to floor sinks						X	X			
Refrigeration piping from evaporators to condensing unit(s)	X	X								
Refrigeration Piping Raceway and Conduits (if required)						X	X			
Pull Boxes at equipment locations						X	X			
Permits - if required	X									
Wiring from time clock to freezer evaporators				X	X					
Condenser water connection (When water cooled)								X	X	
Interwire and final electrical connections to coils, condensing units, refrigeration racks, etc.				X	X					
Electrical disconnects (if required)				X	X					
Low voltage wiring and CAT-5 wiring of alarm system to building system				X	X					
Nitrogen test and subsequently charge refrigeration piping.	X	X								
Start-up system and demo to owner's facilities administrator	X	X								
GARBAGE DISPOSERS										
Disposer, Supply & Install - See Detail MEP-104	X	X								
Control Panel	X				X					
Interwire panel to disposer				X	X					
Interwire from panel to solenoid				X	X					
Electrical disconnect (if required)				X	X					
Water connection to disposer						X	X			
Flow control valve	X							X		
Solenoid & Vacuum Breaker	X							X		
Waste connections at disposer						X	X			
HOSE REELS										
Hose reel	X							X		
Control cabinet with mixing valve and shut off valve when specified	X							X		
Vacuum breaker	X							X		
Interpiping blended water from control panel to hose reel						X	X			
ICE MACHINES										
Ice machines & bin	X	X								
Water filter	X							X		
Interpipe water through water filter						X	X			
Final electrical connection				X	X					
Electrical disconnects if required				X	X					
REMOTE FILTER SYSTEMS										
Filter Head and cartridges	X							X		
Water supply to filter system								X	X	
Interpiping from filter system to individual points of use								X	X	
Final utility connection to equipment connected to filter system								X	X	
FINISHES										
FRP (wall panels)								X	X	
Finished floors, walls, and ceilings, building tile work								X	X	
Wall repairs (if required)								X	X	
Bumper rails and corner guards unless specified								X	X	
Stainless Steel Wall Panels	X	X								
Walk-In Refrigeration finished floor (when recessed slab box)								X	X	
MISCELLANEOUS										
Hoisting								X		
Building Access for large items - coordinate ahead of time								X		
Wall blocking								X	X	
Trenching								X	X	
Dumpsters								X		
Removal of packaging material from food service equipment/millwork	X	X								
Water proofing								X	X	

OWNER & VENDOR													
All vendor provided items - 300 series item numbers in the schedule												X	X
Bulk CO2 System - Bag-in-Box (if required)												X	X
Paper Towel and soap dispensers - 300 series item numbers in the schedule												X	X
POS - Point of Sale System - 500 series item numbers in the schedule												X	X
Sound System												X	X
Security System												X	X
Telephone System												X	X
Safe												X	X
Garbage/Recycling bins - 500 series item numbers in the schedule												X	X
COORDINATION & INSPECTIONS													
Project Coordination	X	X	X	X	X	X	X	X	X	X	X	X	X
Host Discipline Coordination meeting and develop "Discipline Coordination Sheet"	X	X											
Coordinate the sequencing of all equipment, hoods-ceilings, boxes-flooring, etc.										X	X		
Floor, Ceiling and Wall Protection during equipment installation										X	X		
Permits (Health Department)												X	X
Health department inspection walk through	X												
Coordination of inspections for foodservice areas	X	X											
Testing, Start-up & Demonstration of Kitchen Equipment	X	X											
Construction Schedule										X	X		
Rough-in Drawings, Electric/Plumbing	X												
Rough-in height and locations - to be shown in FSEC submittal drawings	X			X									
Shop Drawings for all custom fabrication items,	X	X											
BIM/REVIT plans and coordination	X	X											
Critical Dimensions and Hold to Dimensions - provide to FSEC										X			

5.3 COORDINATION OF RESPONSIBILITY

A. The responsibility of the Architect consists of the following:

1. Receive and forward all Submittals to Foodservice Consultant.
2. Receive and forward all RFI's to Foodservice Consultant.
3. Receive and forward all Meeting Minutes to Foodservice Consultant.
4. Receive and forward all Project Schedules to Foodservice Consultant.
5. Notify Foodservice Consultant when project is ready for inspection.

B. The responsibility of the Food Service Consultant consists of the following:

1. Receive and review all Submittals.
2. Receive and review all RFI's.
3. Receive and review all Meeting Minutes.
4. Receive and review all Project Schedules.
5. Complete final project inspection and report.

5.4 SCHEDULING LEAD TIMES AND DELIVERY

A. The Work shall be conducted based on the following sequence and lead times:

1. Schedule starts after PO's are released to FSEC.
2. Submittals and Shop Drawing Lead Time to produce: **Typical 2 weeks.**
3. Shop Drawing Review by General Contractor/Architect/Consultant: **Typical 2 weeks.**
4. Rough ins completed by trades, stub up locations.
5. Field Measure millwork: **Typical 1-2 days.**
6. Install millwork: **Typical 2 weeks** – this varies depending on project size
7. Template Counter Tops: **Typical 1-2 days.**
8. FSEC Partial Installation: **Typical 1 week** – this varies depending on project size
9. Install Countertop: **Typical 1-3 days** – this varies depending on project size
10. FSEC Final Installation: **Typical 1 week** – this varies depending on project size
11. MEP Trades to make final connections.

B. Delivery: Coordinate with progress of construction and Owner's operation schedules. Unless otherwise instructed and documented by Owner or General Contractor, the following procedures apply:

1. Field-Assembled Fixed Equipment: Integrated into the structure; including, but not limited to, walk-in box assemblies, exhaust hoods, drain trench or grate assemblies, conveyor systems, and ceiling mounted utensil racks are to be sent to the jobsite when directed by the General Contractor and installed or protected accordingly.
2. All other Fixed Equipment: Deliver after completion of adjacent finished ceilings, lighting, finished floor and wall systems; including painting.
3. Major Movable Equipment: Deliver when possible, to inventory in a secured area for the interim job site storage or, if secured storage is not available, when fixed equipment installation and clean-up has been completed.

5.5 GENERAL CONTRACTOR (GC) RESPONSIBILITIES

A. General: Cooperate fully with the Food Service Consultant so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.

B. The General Contractor (GC), or GC's designated sub shall be responsible for the following:

1. Construction Waste and Disposal: Provide dumpsters for foodservice packaging.
2. Building Access: Provide proper building access for all equipment.
3. Critical Dimensions: Carefully coordinate all critical dimensions with FSEC, especially for counters and other special fit items. Provide these dimensions as much in advance as possible to ensure sufficient time for FSEC's fabricator to fabricate these complex counters and "hold" dimensions.
4. Provide refrigeration contractor with refrigeration pack rigging to curb.
5. Floor, Ceiling and Wall Protection: Provide as necessary during the course of the entire project to ensure that no harm comes to any equipment and or new finishes.
6. Coordinate the sequencing of all equipment and items which potentially might adversely affect the installation of same by improper sequencing.
7. Floor troughs: Set and level into concrete wet bed.
8. Carefully coordinate with FSEC all coordinated finishes such as stainless-steel wall panels, location, and heights.
9. Coordinate recess depth: For Walk-In Refrigeration finished floor, thick set quarry tile or as per finish schedule
10. Coordinate and provide concrete pads for remote compressors or rack system.
11. Penetrations: Sealing of penetrations through rooftop and any sleeving of any walls required.
12. Coordinate and supply tile work as needed in recess of millwork pockets.
13. Install FRP (wall panels) in food preparation areas to meet Board of Health sanitation requirements.
14. Host regular Foodservice Specific meetings. Attendees include:
 - a. Architect.
 - b. Food Service Consultant.
 - c. Dining Service representative.
 - d. FSEC.
 - e. Electrical Contractor.
 - f. Plumbing Contractor.
15. Host occasional meeting with vendor/owner provided equipment installers and refrigeration contractor as required.

16. Fire Protection System: Coordinate the items below.
 - a. Wiring to building alarm monitoring stations.
 - b. Installation of gas valves (sized by MEC, supplied by FPSC).
 - c. Wiring between gas valve and Automan (control head unit).
 - d. In wall recesses for remote pull stations – See detail EXH-1
 - e. Power supply and electrical connection to Automan.
17. Contractor shall issue a letter, signed by all sub-contractors involved and co-signed by Owner's representative stating that staff have been satisfactorily instructed in the use of the equipment.
18. GC to consolidate all punch list inspection reports to one report, Food Service, Architects, Engineers, and GC.

C. Composite Crews and Claims of Jurisdiction:

1. The FSEC will be expected to bring all foodservice items to the site and set these items in their proper locations using their labor force.

5.6 FOOD SERVICE EQUIPMENT CONTRACTOR RESPONSIBILITIES

- A. General:** Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner. Dealer is responsible for reviewing, correcting, and guiding food service fabrication process, installation requirements, and codes. Dealer to follow formal protocol and flag any code or compliance issues, submitting RFI's or noting issues on submittals.
1. Coordination of Information: FSEC will coordinate information required by other trades relating to food service equipment and hold a meeting with GC discussing requirements specific for this project. Dealer to provide and generate a "Discipline Coordination Sheet" clearly defining scope of work performed by dealer and scope of work expected by other trades. See attached "Exhibit B - Discipline Coordination Sheet" at the end of this specification.
 2. Subcontracting of Work: Is allowed where due to jurisdictional agreements and/or conditions must be done by others. This is at the expense of the FSEC. Some subcontractors may include Millwork, Stainless Steel Fabrication, Fire Suppression, Refrigeration, etc.
 3. Coordinate details and scheduling work at site with other work to avoid unnecessary interference or damage. Dealer to submit a "Project Plan" outlining sequence of delivery items, like, hoods, walk-in boxes, equipment, millwork, etc. See attached "Exhibit C - Project Plan" at the end of this specification.
 4. Installer's Qualifications: Work will be completed by experienced installers in accordance with Drawings and Specifications.
 5. Staffing Level: Employ qualified installers and supervisors to complete the work without delay.
 6. Final Connections: Notify in writing, a minimum of five (5) days in advance, all trades involved in final connections of food service equipment and prior to beginning of this installation.
 7. Installation and Supervision: Continuous during normal job hours until all equipment is installed and connected.

- B.** The Foodservice Equipment Contractor (FSEC) in compliance with Section 11 4000 will be expected to provide and install the following:
- 1. EXISTING EQUIPMENT (FOOD SERVICE EQUIPMENT CONTRACTOR):**
 - a. The term "existing equipment" as used in this specification shall mean food service equipment now in storage or active use by the Owner. Where such equipment is reused, it shall be the responsibility of the Food Service Equipment Contractor (section 11 40 00) to carefully examine each unit beforehand to ascertain proper fitting and alignment in its new location.
 - b. The Food Service Equipment Contractor (section 11 40 00) shall verify and indicate on his rough in plan all utility connections required for the proper installation of existing equipment to be reused.
 - c. GC is responsible for the removal, cleaning, storage, and relocation of the equipment. GC shall coordinate to disconnect and reconnect of services, if required, shall be performed by related trades; final required utility connections to be verified by Plumber/Electrician. All Final connections by Electrician/Plumber.
 - d. FSEC to inspect existing equipment and present a separate proposal fee if any repair/replacement of parts as necessary for item to operate in accordance with manufacturer requirements and specifications.
 - 2. RECONDITIONING/REFURBISHING shall be interpreted to mean:**
 - a. A thorough scraping and steam cleaning to remove scale and all foreign material.
 - b. Repainting of all items having exposed, worn, or scarred surfaces which are not of rustproof materials.
 - c. Furnishing any required filler pieces, braces, hardware, and so on necessary to complete the installation in a workmanlike manner.
 - d. Repainting of the understructure (legs, shelves, drawers, etc.) where required shall be in aluminum lacquer or other chip resistant finish. Other items shall be completely repainted or touched up, as required by their condition, in their original color.
 - e. Refrigeration equipment shall have all components checked for efficient operation, and all worn or malfunctioning items shall be replaced.
 - f. Items containing heating elements shall be checked and any electrical components not functioning properly shall be replaced.
 - 3.** When existing equipment is to be reconditioned, the Food Service Equipment Contractor (section 11 40 00) shall submit a time and materials proposal with a list of the items to be reconditioned, which shall be in addition to the base bid.
 - 4.** The GC is responsible for removing and disposing of existing food service equipment which is not to be reused and shall verify with the Owner and obtain written release prior to removing such equipment. The GC shall retain any salvage value, unless specified otherwise by the owner.

5. A schedule of relocating existing equipment shall be determined before the Contract is awarded. If changes are made that cause additional charges, the company causing such changes will be responsible for the costs involved.

C. SUBMITTAL PACKAGE: Including all rough-in drawings, shop drawings, finish samples and all associated submittals in compliance with Section 11 40 00 "Food Service Equipment."

1. Equipment Digital base plan may be requested from Consultant and will be provided by FSEC use in preparation of submittals. Electric/Plumbing rough-ins, equipment details, and millwork sections will not be provided as these need to be generated by the FSEC completing final step of due diligence check generating technical submittals illustrating what is being supplied, how it will be fabricated and how it will be installed. Copying and pasting design document details will not be permitted. All shop drawings are to be submitted to scale or they will be rejected. Hand drawn shop drawings will be rejected.
2. Obtain copies of the latest architectural plans from architect prior to beginning the dimensioned rough-in submittal plans. Submittals are to be based off latest set of drawings, including all addendum/revision released.
3. Submittals are to be coordinated between all engineered systems by FSEC before submitting for review. FSEC is to take ownership of all submittals.
4. Review all shop drawings internally prior to submitting to SHG, especially those that are typically auto generated and are not accurate. check for accessories, utility ratings and dimensions. SHG will reject submittals if they are found to be completely off and not line up with project.
5. Submittals to be sent as a complete package; partial or incomplete submittals will be rejected by GC/Architect/Consultant. Equipment Plans should not be submitted without equipment cutbooks or vice versa. Both need to be submitted together for comprehensive submittal review.
6. Submittals are to be separated out, per specifications. Not lumped together as (1) large submittal file
7. All Equipment plans and rough-in drawings to utilize FS design corresponding item numbers. Do not create your own numbering system.
8. Shop Drawings should not read "confirm" or "verify" - the dealer as part of the submittal process needs to close those gaps via formal RFI's if need or site survey dimensions or dictate a hold dimension on shop drawings if need be.
9. Shop drawings to include all equipment, including by others for proper spacing verification. Especially millwork shop drawings. Do not submit millwork only with gaps. Exact actual equipment to be shown and how the millwork is constructed around it for proper fabrication, reinforcement, and clearances.
10. Submit the following:
 - a. Equipment Floor Plans and Dimensioned Rough-ins for Electric, Plumbing & any chase drawings (soda runs, refrigerant runs, beer lines, etc.). See section 11 below for further requirements on this submittal.

- b. Custom Fabricated Shop Drawings, Exhaust Hood, Stainless Steel Fabrication, Millwork etc. See section 10 below for further requirements on this submittal.
 - c. Sneezeguard submittals to be reviewed and coordinated with Millwork, uncoordinated default system generated guards will be rejected. Sneezeguard submittal to be reviewed by millwork fabricator and signed off
 - d. Equipment Cut-Book complete with numbered cover sheets and accessory listing. See section 12 below for further requirements on this submittal.
 - e. "General Responsibility Outline" sheet defining roles and responsibility for all relevant project scope. Refer to SHG Exhibit 6 Form, feel free to replicate and update as relevant.
11. Equipment Floor Plans and Dimensioned Rough-ins for Electric and Plumbing.
- a. Within **30** working days from award of contract, the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the following drawings to the Owner or his designated representative for review:
 - 1). A floor plan of all food service areas showing all items of equipment and sufficient dimensions to indicate placement of equipment from walls, other items, etc. This sheet shall include an equipment schedule indicating item number, quantity, and description. This sheet is to be based on the Architect's dimensional drawings or field review of existing conditions, whichever is available. Under no circumstances will a tracing from the Architect's or Consultant's work be acceptable.
 - 2). A completely and clearly dimensioned electrical rough-in plan indicating exact locations, heights, and services required for each item of food service equipment, as well as any incidental services (for example, convenience receptacles) shown on the Consultant's spot connection plan. This sheet shall also include an equipment schedule, and each utility description on the body of the sheet shall be accompanied by the appropriate item number. It is expected that the Food Service Equipment Contractor (section 11 40 00) will refer to the data prepared by the Architect and Consultant to complete this requirement; however, it is the responsibility of the Food Service Equipment Contractor (section 11 40 00) to verify information shown thereon, and submittal by the Food Service Equipment Contractor (section 11 40 00) will warrant that he is fully satisfied that the information shown on the submittal is totally correct, complete, and ready for use in the field by other trades. On a new project, rough-in dimensions shall be calculated from column center lines or other established datum points. On a project in an existing space, calculations shall be from finished walls. Indicate all interconnection requirements by other trades.
 - 3). A plumbing rough-in plan conforming to the requirements noted in (b) above.
 - 4). A chase provision drawing indicating soda line PVC chases, Refrigerant Line PVC Chases and or Beer Line PVC Chases. Plan is to show full detailed runs/rises from source to destination with all penetration detail, sweep curve radius, etc. GC – General Contract will utilize these to provide the PVC chase.

- 5). A ventilation rough-in plan conforming to the requirements noted in (b) above.
 - 6). A building conditions plan conforming to the requirements noted in (b) above, and including all pertinent information regarding masonry bases, curbs, recesses, critical dimensions of walls and openings, wall anchorages and overhead supports, and any other special information required to insure a properly completed installation.
- b. The scale of these drawings shall be 1/4" = 1'-0", and it shall be the responsibility of the Food Service Equipment Contractor (section 11 40 00) to ensure that his drawings are properly coordinated and that there are no conflicts between sheets. The Food Service Equipment Contractor (section 11 40 00) may, at his option, combine [(b) and (c)] and [(d) and (e)], providing that the scale of all drawings is increased to 1/2" = 1'-0".
 - c. The review of these drawings by the Owner or his designated representative is for design purposes only, and that review and/or the reviewer's election to review drawings submitted not in accordance with the above directions will not relieve the Food Service Equipment Contractor (section 11 40 00) from responsibility for the consequences of not having prepared the drawings as above described.
 - d. The Food Service Equipment Contractor (section 11 40 00) shall be fully responsible for the accuracy of all submissions and drawings made by him. If such mechanical, electrical, refrigeration, illumination, service lines or ventilation service lines are not properly installed because of errors or omissions on said drawings, it shall be the duty of the Food Service Equipment Contractor (section 11 40 00) to remove, relocate or install new lines at his own expense. Cutting, patching, installing, removing, or relocating of such utilities shall be done as directed by the Architect and/or Consultant.
 - e. The Food Service Equipment Contractor (section 11 40 00) should attend a slab rough-in inspection before slab is poured to confirm locations of major stub-ups.

10. Manufacturer's Drawings:

- a. It is the responsibility of the Food Service Equipment Contractor (section 11 40 00) to ensure that drawings required from his vendors are received and submitted so as to allow review, correction, re-submittal, and production within the requirements of the project schedule.
- b. The Food Service Equipment Contractor (section 11 40 00) shall review, coordinate, and correct these drawings before submitting them for review. Submit electronic copies for review and approval.
- c. The Food Service Equipment Contractor (section 11 40 00) is responsible for verifying that notes and revisions on these drawings do not conflict with his rough-in drawings and shall immediately notify the Owner or his representative of any such conflicts.

11. Shop Fabrication Drawings:

- a. Within **30** working days from award of contract the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the following drawings showing complete fabrication details of custom fabricated equipment.

- b. The scale of these drawings shall be $3/4" = 1'-0"$, with sufficient cross sections to accurately describe construction. Sections shall be at a scale of $1-1/2" = 1'-0"$. Each drawing shall show name and address of fabricator.
 - c. These drawings shall indicate locations of utilities and interconnections in relation to the custom equipment. Junction boxes and breaker panels shall be presented in schedule form showing individual connections and total load. If requested by the Owner, provide complete wiring diagrams. The sepia copy will be returned.
 - d. Shop drawings shall indicate all pertinent details, including item number, type of material, gauge of material, method of fastening, dimensions, hardware, model numbers, location and size of mechanical and electrical connections, number of units required. Where an item of standard production line equipment, i.e., "buy-out" item, is mounted on, or adjacent to a shop fabricated item, it shall be shown in outline form on plan and elevation, accurately scaled, to indicate relationship and clearances.
 - e. All fabricators involved should be aware that the project has bought the details specified and the design team will be conducting site inspection and will require that everything gets replaced that does not conform to those details. This is related to Stainless Steel custom fabrication and Food service Millwork. Submittals should reflect all of the details and how they intend to be constructed. Submittals without those details will be rejected for resubmission.
 - f. After final approval of shop drawings, the Food Service Equipment Contractor (section 11 40 00) shall furnish additional copies as requested.
 - g. Approval of shop drawings shall not relieve the Food Service Equipment Contractor (section 11 40 00) from full compliance with the Contract drawings and specifications unless any deviation from same has been brought to the Consultant's attention in writing and approval for same has been given in writing.
12. Manufacturers' Illustrations:
- a. Within **30** working days from award of contract, the Food Service Equipment Contractor (section 11 40 00) shall submit electronic PDF files of the equipment cut book to the Owner or his designated representative for review:
 - b. Provide a cover sheet for each item number, indicating item number, quantity, description, manufacturer, model number, utilities required, and accessories.
13. The review of these items by the Owner or his representative is for the assistance of the Food Service Equipment Contractor (section 11 40 00) and does not relieve the Food Service Equipment Contractor (section 11 40 00) of any responsibility for accuracy and completeness. When the Food Service Equipment Contractor (section 11 40 00) is notified, that further resubmittals will not be required, he shall provide to the Owner a reasonable number of copies of prints and brochures without charge.

**5.7 FIRE PROTECTION SYSTEM CONTRACTOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A. General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B. Provide and install the following:

1. Provide and install Ansul Fire protection system including the following components.
 - a. Provide Mechanical/Electric Gas Valve, sized by direction of MEC (installed by GC).
 - b. Gas valve to be normally closed, powered-open design and shall fail closed upon activation of hood fire suppression system, loss of power, manual deactivation of hood-fan or failure of fan. See fire suppression specifications.
 - c. Required Cabling for a complete system.
 - d. Mounting of Automan (control head unit).
 - e. Mounting of Tanks below ceiling line and located out of customers view.
 - f. Mounting of remote pull station in provided recessed box. Recessed box provided by electrical contractor. Surface mounted pull stations will not be accepted. Refer to detail #EXH-1
 - g. Piping and protection nozzles over equipment and in duct plenum (if hood is not pre-piped from factory).
 - h. Tag and Arm System.
 - i. Provide shop drawing submittal with system information as required by local authority having jurisdiction for permit application and acquire the permit which is to be present during testing procedure.
 - j. Ansul System Tank placement is critical and should be located as per Food Service Design plans. Tanks, Control cabinets, Electrical Panels, all should not be visible from customer in any front of the house applications, such as Bistro's, Cafes, Serveries, Markets, Hospitality Kitchens, Grills, Bars, etc. and should be located back of the house. If placement is not possible per drawings a formal RFI needs to be submitted

- C. Testing and Inspection: Electrician/plumber should be present and actively involved during testing procedure as it relates to their trade, to ensure equipment operates properly, prevent damage and remedy issues as they occur.
 1. Perform follow up 6-month inspection.
 2. Set-up annual inspection program.
 3. The Following items are to be managed and provided by the General Contractor:
 - a. Wiring to building alarm monitoring systems.
 - b. Installation of gas valves (Sized by MEC, supplied by FPSC).
 - c. Wiring between gas valve and Automan (control head unit).
 - d. In wall recesses for remote pull stations.
 - e. Power supply and electrical connection to Automan.

**5.8 MILLWORK FABRICATOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 - 1. Review in detail Food Service Millwork details, specifications, and architectural related finish schedules.
 - 2. Provide detailed CAD level shop drawings showing construction and installation details and how millwork interfaces with foodservice equipment. Hand drawings will not be accepted.
 - 3. Receive all drop-ins and sneezeguards from FSEC, pre-fit in factory.
 - 4. Provide load centers for any island equipment, interconnect all electrical connections in factory
 - 5. Deliver and install millwork counters and sneezeguards in accordance with the project schedule and needs of the project ready for final connections by mechanical trades.
 - 6. Provide, locate and cut-in stainless steel floor sink sleeves after millwork is installed. (Refer to detail MEP-100.)
 - 7. Provide grommet holes, cut in place after equipment installation. Location of grommet holes to be coordinated with kitchen operating staff preferences.
 - 8. Seal all exposed raw wood surfaces and trim/seal/caulk millwork to walls as required to meet board of health regulations.

**5.9 REFRIGERATION CONTRACTOR RESPONSIBILITIES
(FOOD SERVICE EQUIPMENT SUBCONTRACTOR)**

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
 - 1. Mount refrigeration unit on curb (rigging to be provided by GC, coordinate schedules as necessary w/ GC rigging dates).
 - 2. Provide all refrigeration piping for units which remotely connect to rooftop refrigeration unit.
- C.** Submittals: Submit shop drawing of rack system and piping diagram of installation runs showing chase requirements from source to each destination.
- D.** Testing:
 - 1. Nitrogen test and subsequently charge refrigeration piping.
 - 2. Factory inspection of installation is required and should be performed prior to startup of system.
 - 3. Startup: Remote refrigeration units in coordination with GC's electrician and in presence of factory engineer.
 - a. Plumber should be present and actively involved in start-up of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.

E. Project Closeout:

1. Provide operation and maintenance manuals for all equipment in digital CD and 3 ring binder form including a comprehensive service listing for all equipment items including fabrication.

F. Work not included in the Refrigeration Contractors Scope to include the following:

1. GC to provide pad for refrigeration rack.
2. Electrical wiring and disconnect to rack.
3. Interconnecting wiring from rack to freezer evaporator coils.
4. Piping of condensate lines from all evaporator coils.
5. Heat trace on freezer section condensate lines.
6. Penetrations and sealing of penetrations through rooftop and any sleeving of any walls as required.
7. Low voltage wiring and CAT-5 wiring of alarm system to building system and to control data software in foodservice manager's office.
8. Piping of condensate lines from all evaporator coils.

G. Meetings: Participate in regularly scheduled (as required) foodservice specific coordination meetings as scheduled by GC.

5.10 ELECTRICAL CONTRACTOR RESPONSIBILITIES

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Provide all rough-ins (required service to utility connections noted on FSEC rough-in drawings).
 2. Electrical Contractor to follow shop drawings submitted by dealer and reviewed by Food Service designers and MEP Engineers. These shop drawings will contain dimensioned rough-ins and utility loads. By no means should the Electrical trades rough-in from design plans as equipment loads and/or manufacturers might change through submittal process.
 3. Provide all final connections to all foodservice equipment.
 4. Electrical Safety Disconnects (provide means of disconnect for all direct wired equipment) Typical for, Dishwasher, Disposer, Heavy duty Mixers, Walk-in Compressors, etc.
 5. Wiring interface from Exhaust/Make-Up fans to control points.
 6. Provide wiring to all lights/switches in exhaust hoods.
 7. Provide switching, interconnected wiring and all associated starters for exhaust/condensate hood fans.
 8. Wire provided table limit switch in clean dish table.
 9. Provide all shunt rips for any electrical cooking equipment and interconnect to Ansul system.
 10. Provide ethernet wiring for walk-in alarm units (interconnected to building alarm monitoring system).
 11. Interconnecting wiring from rack to Walk-In Freezer evaporator coils.
 12. Lighting connections in Walk-In Cooler/Freezer.
 13. Heat trace on condensate lines in Walk-In Freezer section.
 14. Low voltage data wiring from POS to manager's office and digital menu boards.
 15. Ethernet wiring of alarm system to building system.
 16. Main supply to millwork counter, chefs' counters load centers and final connection to load center.
 17. Install loose light fixtures (including penetrations and sealing penetrations) in walk-ins.
 18. LED Lighting in millwork counters will be provided by FSEC. Provide required light switch and wiring to LED light.
 19. Provide all DCR's shown on foodservice rough-in drawings.
- C.** Project Closeout: Electrician should be present and actively involved in startup/testing of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.
- D.** Meetings: Participate in regularly scheduled (as required) foodservice specific coordination meetings as scheduled by GC.
- E.** Temporary Equipment Relocation: If electrician needs to move a piece of equipment for proper access after it has been set then the electrician will be expected to return this same piece of equipment to its correct location or coordinate temporary positioning with FSEC.

5.11 PLUMBING CONTRACTOR RESPONSIBILITIES

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Provide all rough-ins (required service to utility connections noted on FSEC rough-in drawings)
 2. Plumbing Contractor to follow shop drawings submitted by dealer and reviewed by Food Service designers and MEP Engineers. These shop drawings will contain dimensioned rough-ins and utility loads. By no means should the Plumbing trades rough-in from design plans as equipment loads and/or manufacturers might change through submittal process.
 3. Extend all interconnected safe drains to building Floor Sinks for safe indirect waste including indirect waste drain from walk-in cooler/freezer assemblies and refrigeration units to drains.
 4. When drains are extending through stainless tables and cuts are made, all edges to be treated with Trim Lok Edge or equal, no rough-cut exposed edges will be acceptable.
 5. Provide all Floor Sinks, Area Floor Drains and Standpipes. Install and plumb Floor Through - Floor Throughs will be provided by FSEC.
 6. Install Quick-Disconnect gas hoses and restraining Devices (provided by FSEC).
 7. Install Quick-Disconnect water hoses (provided by FSEC). All mobile equipment is to be connected with a Quick-Disconnect safety water hose – do NOT hard plumb to building.
 8. Provide all connections to all foodservice equipment. All interconnections will be provided by FSEC.
 9. Mount hand wash sinks. (faucets, drain wastes, drain levelers, etc.)
 10. Make joining connections for plumbing connections to large items that need to be broken into smaller components for building access.
 11. Provide all plumbing materials including pipe, traps, stops, valves, gauges, unions, and insulation.
 12. Extra care should be taken to run all piping inside the wall including gas lines as much as possible limiting amount of exposed piping.
 13. Provide all backflow preventers for beverage equipment including vendor supplied beverage equipment.
 14. Install mechanical/electric gas valve provided by FPSC, Run wiring to Automan (Control Head).
 15. Provide 6-inch PVC Beverage Raceway and Conduits, coordinate with owners Vendor/Supplier of Bulk CO2 System for routing.
 16. Provide 3-inch PVC Refrigeration Piping Raceway and Conduits, coordinate with Food Service Equipment refrigeration subcontractor for routing.
 17. Provide 6-inch PVC Beer Raceway and Conduits, coordinate with dealer's supplier of Beer System for routing requirements.
 18. Provide interconnecting piping from all water filters to all water filter outlet destinations.
 19. Provide all grease interceptors and grease traps
- C.** Temporary Equipment Relocation: If plumber needs to move a piece of equipment for proper access after it has been set then the plumber will be expected to return this same piece of equipment to its correct location or coordinate temporary positioning with FSEC.

5.12 HVAC CONTRACTOR Section 23 00 00 (retained by GC Section 01 00 00)

- A.** General: Cooperate fully with the General Contractor so work may be carried out smoothly, without interfering with or delaying other work for this Contract or work by Owner.
- B.** Provide and install the following:
1. Review all Exhaust Hood Engineered data spec drawings for CFM Exhaust and Make Up Air requirements for all kitchen hoods, cooking, and dishwashing.
 2. Size and engineer ductwork and fans for all kitchen hoods, cooking, and dishwashing. Provide Tempered (heated) air for make-up and conditioned air as required. Ensure fans are VFD compatible for smart on demand hood controls.
 3. Provide and install Grease Ductwork: The HVAC Contractor shall make an approved type of connection to hood duct collar in accordance with NFPA 96, Vapor Removal from Cooking Equipment. Ductwork required for the connection of ventilators to the exhaust blower must be of at least 16-gauge carbon steel or 18-gauge stainless steel, all welded watertight construction, and pitched for proper drainage. Long horizontal runs should be avoided if at all possible. All ductwork shall be provided and installed by the HVAC Contractor. HVAC contractor may choose to request duct collars to be shipped loose for flexibility in locating in the field – coordinate with FSEC contractor. Ensure installation complies to any clearance to combustible requirements.
 4. Provide and install Condensate Ductwork: Non-cooking exhaust ductwork such as dishwasher exhaust system, etc. cannot be connected to the grease ductwork. Separate systems must be maintained. Warewashers will commonly be provided with stainless steel ductwork risers by the FSEC to a point 3" above the finished ceiling. The FSEC shall provide a balancing damper for each duct riser. HVAC Contractor shall make the connection to the two straight ducts above.
 5. Ceiling diffusers shall be at least 6'-0" from all sides of the ventilator and the velocity at the diffuser shall not exceed 150 feet per minute (fpm) or ceiling diffusers shall be 15'-0" from all sides of the ventilator and the velocity at the diffuser shall not exceed 300 feet per minute (fpm). The maximum velocity of the make-up air from transfer air, diffusers, etc. Shall not exceed 75 fpm at the ventilator lip. Kitchen pressurization shall not exceed -0.02"w.g. relative to the dining or adjacent spaces, as stated in NFPA-96 and ashrae standard 154.
 6. Balance system to prevent any cross drafts and negative pressure. Provide balancing report to design team.
 7. Dishmachines with Built-In Condenser Systems and Recirculating Hoods generate substantial heat, provide additional exhaust to remove heat as typically these are located in tight pantries

5.13 STORAGE AND DELIVERY (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A.** Receive all equipment at an offsite warehouse and store equipment until required
- B.** Receive all equipment at an offsite warehouse and store equipment until required.
- C.** Field-Assembled Fixed Equipment: For types integrated into the structure; including but not limited to walk-in boxes assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, and ceiling mounted utensil racks, deliver to the jobsite when directed by the General Contractor.
- D.** Other Fixed Equipment: Deliver after the work on adjacent finished ceilings, lighting, finished floor and wall systems is complete.
- E.** Major Movable Equipment: Deliver to the inventory area for interim job-site storage or, deliver when the fixed equipment installation and clean-up has been completed.
- F.** Deliver all equipment to the jobsite in accordance with the project schedule and needs of the project.
 - 1. Exhaust Hoods and Walk-In coolers to be delivered/installed prior to equipment delivery to accommodate construction schedules with other trades (flooring, ceiling contractors).
- G.** Coordinate any large equipment that will not fit through standard 36-inch finished door opening and arrange prior delivery/installation with GC
- H.** Coordinate with GC any equipment having heavy load bearings to ensure building structure can handle loads. (Hearth Pizza Ovens, etc.).
- I.** Field-Assembled Fixed Equipment: For types integrated into the structure; including but not limited to walk-in boxes assemblies, exhaust hoods, drain trench/grate assemblies, conveyor systems, and ceiling mounted utensil racks, deliver to the jobsite when directed by the General Contractor.
- J.** Assemble all equipment and provide manufacturer interconnections of any electrical plumbing work as provided by manufacturer as part of the equipment package. Equipment to be ready for final connections by GC's Electrician and Plumber. This includes:
 - 1. Mount faucets
 - 2. Overflows
 - 3. Disposer(s), Scrapper(s) piping and electrical interconnections to remote on/off switch.
 - 4. Table Mount Shelving.
 - 5. Mobile/Stationary Shelving.
 - 6. Booster Heater water interconnections to warewasher.
 - 7. Heat Lighting Strips.
- K.** Trim and seal all equipment to walls once equipment is fully connected, including but not limited to, walk-in boxes, exhaust hood, condensate hoods, tables, and millwork
- L.** Provide and Install Stainless Steel Wall Panels behind cooking equipment and in dishrooms prior to electrical face plates and gas manifold line installation when specified.

- M.** Construction Waste Disposal: All equipment packaging and crating to be placed in dumpsters on site as provided by GC. All trash is to be removed from work areas prior to the end of each workday if not accomplished immediately.
- N.** Protection: Provide floor and wall protection as necessary during delivery and setup of equipment to prevent any damage to building and new finishes.
- O.** Hang all exhaust hoods and PSPs (perforated supply plenums) from building structure per factory requirements. Bottom of ventilators to be installed 6' -8" above the finished floor. Ventilators to be suspended from overhead construction with ½" diameter steel rods having adjusting turnbuckles. Ensure hood is installed to provide proper overhangs over cooking equipment, recommended 12" in front, 6" on each side. Center hood on island applications. Dealer to provide critical dimensioned drawing to GC showing "keep clear area" for hood hanging locations.
- P.** Ship all buy-out equipment, drop-ins, sneezeguards etc. to millwork fabrication shop.
- Q.** Coordinate delivery and set-up of millwork counters.
- R.** Provide floor trough(s) for GC to set in wet bed of concrete. Provide detailed recessed slab drawings to GC for proper positioning of floor through(s) to ensure pour path aligns with tilting kettles/skillets.
- S.** Coordinate with GC/Owner for Bulk CO2 System location and installation as supplied by owner's Vendor.

5.14 SITE INSPECTION AND FIELD VERIFICATION (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A.** Installation Inspection - This is the act of a qualified individual reviewing the "job site" to be certain and confirm that all of the mechanical connections to a particular piece of equipment are correct and in accordance with the manufacturer's written specifications. The term MECHANICAL in this definition refers to gas, steam, water, electric and ventilation. The installation inspection also includes proper clearances, service access, positioning and leveling of equipment, and the use of restraining devices when applicable. This inspection does not include confirmation of the installation meeting applicable codes.
 - 1) CFESA Recommended Installation Form – Form shall be completed by the Installer with copies provided to the FSEC The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 2 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.
- B.** Examine conditions, for compliance with requirements and other conditions affecting performance of the Work.
 - 1. Report discrepancies to the Architect.
 - 2. Proceed with installation only after unsatisfactory conditions have been corrected.
- C.** Review submittals to confirm compliance with contract documents. Report all conflicts in writing to the Architect.

- D. Verifying all dimensions, quantities, construction details, finishes, sizes, etc.
- E. Equipment to be Reused: Inspect to verify the mechanical, electrical, or other service needs required.
 - 1. Report discrepancies to the Architect.
 - 2. Proceed with installation only after mechanical, electrical, or other service needs have been mitigated.

5.15 INSTALLATION (FOOD SERVICE EQUIPMENT CONTRACTOR)

- A. Installation shall include assembly of all food service equipment as shown and scheduled in foodservice equipment plans, properly leveled, fitted, and secured in place, ready for other contractors to make final electrical, steam, gas, water, waste, and ventilating connections, according to manufacturer's written instructions, original design, and referenced standards.
- B. Except for mobile and adjustable-leg equipment, all equipment resting against walls, floors, ceilings and/or other equipment and accessories shall be sealed to walls, floors, or bases with stainless steel fasteners with silicone sealant approved by NSF, as required to prevent entry of vermin and insects. Gaps over 1/4 inch wide will not be accepted.
- C. All horizontal runs of piping and conduit shall be a minimum of 6 inches above finished floors and 3 inches out from all walls. Extra care should be taken to run all piping inside the wall including gas lines as much as possible limiting amount of exposed piping.
- D. Install equipment with access and maintenance clearances according to manufacturer's written instructions and requirements of authorities having jurisdiction.
- E. FSEC is responsible for access to installation locations in building. If it becomes necessary to schedule construction so that all partitions be erected prior to delivery of foodservice equipment, bidders are cautioned that all equipment must be fabricated so that it can be handled through finished door openings.
 - 1. Removal of and replacement of any doors, door frames, wall windows, or other portion of building for access is responsibility of FSEC and he shall assume all costs for such work.
 - 2. If special hoisting equipment and operators are required, FSEC shall include such costs.
- F. Provide cutouts in equipment, neatly formed, where required to run service lines through equipment to make final connections.
 - 1. Gaps of one-quarter (1/4") inch or less adjacent to or between equipment to be sealed with General Electric Series SE-1200 silicon mastic (clear or silver color to be determined by Architect) with excess neatly and cleanly removed.
 - 2. Gaps greater than one-quarter (1/4") inch to be neatly trimmed with eighteen (18) gauge stainless steel molding of proper shape with concealed attachment. Use epoxy cement or wall matching finish or trimmed fixture.
 - 3. Gaps of more than one and one-half (1-1 1/2") inch are NOT acceptable to trim.
 - 4. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating. Refer to typical installation provisions sheet in food service drawings.
- G. Install hoods to comply with NFPA 96 requirements and to remain free from vibration when operating. Refer to typical installation provisions sheet in food service drawings.

5.15 PROTECTION (FOOD SERVICE EQUIPMENT CONTRACTOR):

- A. Protective Covering and Coatings: FSEC to remove all protective covering and coatings from work and clean and service all equipment. Leave equipment free from defect, adjusted and lubricated according to manufacturer instructions.
- B. **CAUTION:** Equipment with scratches, dents, discoloration, or any other obvious damage will not be accepted. All work and materials to be in full accordance with the latest rules of U.S. Public Health Service, National Board of Fire Underwriters, and local or State ordinances, regulations of State Fire Marshall and Underwriter's Laboratory.

5.16 PROJECT CLOSEOUT PROCEDURES (FOOD SERVICE EQUIPMENT CONTRACTOR)

- 1. Cleaning and Protection:
 - 1. Clean up and remove from job site all debris resulting from delivery, installation, protection, cleaning, and adjustment of Food Service Equipment as work progresses.
 - 2. Thoroughly clean interior and exterior of all Food Service Equipment prior to demonstration and final observation. Food Service Equipment to be ready for the Owner's use.
 - 3. Clean or replace line strainers, and faucet aerators.
 - 4. Touch up damage to painted fixtures.
- 2. **Final Observation:** Provided by Food Service Design Consultant when the General Contractor will certify that the work is complete, has made a thorough review of the installation and operation of each item in the contract and found it to be in compliance with the Construction Documents.
- 3. Repetitive Final Observations: In excess of two, and all costs associated thereto which may be incurred due to the General Contractor's failure to comply with the requirements of this article will be invoiced on a time and expense basis and reimbursed to Food Service Design Consultant.
- 4. **Contractor's List of Incomplete Items:** The FSEC will complete a walkthrough with GC and architect and issue detailed punch list report for actions needed to be taken.
 - 1. Procedures will be in compliance with Section 01 7700 "Closeout Procedures."
 - 2. GC to consolidate all punch list inspections reports (Food Service, Architects, Engineers and GC) to one report.
- 5. Installation, Connections, and Testing: To be complete a minimum of five (5) days prior to Owner takeover.

6. Start-up Procedures:

Once the equipment is purchased and installed, it is essential for all parties involved that, where needed, a professional start up or performance check be performed by an authorized service company, followed by a thorough demonstration by the manufacturers' representative. Refer to itemized specification, certain items specifically call out this requirement. When a proper installation is completed, one where the Manufacturer's Requirements, as spelled out in the equipment manual, have all been met along with any and all governing codes, the FSEC shall be responsible for scheduling all of the services outlined in this section to aid in providing a professionally complete kitchen project. It is the responsibility of the FSEC to ensure all forms in the exhibit 1-5 are issued for the appropriate equipment as required, completed and copies are provided to the proper parties as described after the completion of each task. These forms have been created through the joint effort of CFESA (Commercial Food Equipment Service Association), FCSI/NAD (Foodservice Consultants Society International / North America Division) and MAFSI (Manufacturer's Agents for the Foodservice Industry).

1. FSEC will provide start-up service for all refrigeration equipment.
2. Lubricate and adjust drawer slides, hinges, and casters.
3. Adjust pressure regulating valves, time delay relays, thermostatic controls, temperature sensors, exhaust hood grilles, etc.
4. Start up and check out operation of all refrigerated systems for at least 72 hours prior to acceptance and turn over.
5. Calibrate all thermometers to reflect actual temperatures of refrigerated equipment.
6. Start up and test run rotary, reel, or hearth ovens for a minimum of forty-eight (48) hours prior to the Owners inspection.
7. Plumber and electrician should be present and actively involved in startup of all equipment as it relates to their trade to ensure correct operation, prevent damage, and remedy issues as they occur.
8. Provide demonstrations for use of all equipment as requested by Owner or Dining Services. Demonstrations to be conducted by factory trained individuals, typically a factory representative firm.
9. Provide operation and maintenance manuals for all equipment in digital USB flash drive including a comprehensive service listing for all equipment items including fabrication.
10. Upon startup ensure and account for all equipment accessories including but not limited to exhaust hood lights, Walk-In Lights, replacement filter cartridges, mixer/bowl/cutter attachments, gas hoses, cleaning kits, keys for lockable equipment, etc.
11. Startup MUST include a written report of all completed work or operation problems with the specific piece of equipment. Start-up cannot occur until an installation inspection has been performed and approved and any warranty service has been completed.
 - a. Provide CFESA Recommended Start-Up/Performance Check Form - Form shall be completed by the authorized service technician with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 3 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

12. Performance Check - Verification, by an authorized service technician, that the manufacturer's installation specifications are met, and utilities are correct for newly installed equipment. To ensure proper operation of the piece of equipment, an authorized technician, may need to perform minor adjustments, alignments, and calibrations. Performance checks are done any time after equipment has been in operation for a minimum of two weeks to a maximum of 90 days.
 - a. CFESA Recommended Start-Up/Performance Check Form - Form shall be completed by the authorized service technician. with copies provided to the FSEC. The FSEC will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized) and the manufacturer representative (who will provide a copy to the manufacturer if required). See exhibit 3 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

7. Certification Letters and Portal Monitoring Accounts:

1. FSEC to provide all the following certification letters and account access information as applicable for the project
 - a. Letters of certification for dishwasher operation and sanitation compliance
 - b. Letter of certification for the Accurex Hood.
 - c. Letter of Certification and SDV - System Design Verification from Captive-air Hoods indicating proper EMS and VFD operation.
 - d. Provide log-in access for Captive-Aire hood operation and maintenance monitoring. Set-up with owner and program automatic error notifications to be notified via email or text as preferred by facilities.

8. Demonstration and Training: Provide demonstrations for use of all equipment, item by item, including fabricated equipment as requested by Owner or Dining Services.

1. Demonstrations to be conducted by factory trained individuals, typically a factory representative firm.
 - a. Instruction shall include care and cleaning of all equipment and a complete demonstration of operation
 - b. All buy-out equipment shall be demonstrated by factory trained personnel only.
 - c. All actions within the demonstration should be referenced in the operator manual as prepared by the manufacturer of said piece of equipment.
2. General Contractor will provide a letter, signed by all sub-contractors involved and co-signed by the Owner's Representative stating that dining staff have been adequately instructed in the use of equipment.
3. MAFSI Recommended Demonstration Request Form - Form shall be completed by the FSEC with copies provided to the manufacturer representative. The manufacturer representative will be responsible for forwarding completed copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized). The manufacturer representative is responsible for forwarding a copy to the manufacturer if required. See exhibit 4 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

4. MAFSI Recommended Demonstration Inspection Report - Form shall be completed by the manufacturer representative with completed copies provided to the F.E.C. The FSEC will be responsible for forwarding copies to SHG (who will provide the final bond copy of all completed forms to the Owner/End User when all work is finalized). The manufacturer representative is responsible for forwarding a copy to the manufacturer if required. See exhibit 5 for the required form. Original form files are available upon request from SCOPOS Hospitality Group, CFESA and MAFSI for reproduction as required.

9. In addition to the guarantee called for under the General Conditions, this FSEC shall further agree that in the event of failure of any system or item of equipment or improper functioning of specified work during the guarantee period, he shall have "on call" competent service personal available to make the necessary repairs or replacements of specified work promptly at no cost to the Owner. In the event that replacement of an entire item is required, the Owner shall have the option of full use of the defective equipment until a replacement has been delivered and completely installed.

5.17 PROJECT RECORD DOCUMENTS (FOOD SERVICE EQUIPMENT CONTRACTOR)

1. Operation and Maintenance Manuals: Comply with Section 017700 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.
 1. A minimum of three (3) weeks before the job opening, the Food Service Equipment Contractor shall furnish USB Flash Drive containing digital maintenance and repair manuals, giving operating and maintenance instructions, parts lists.
 - a. Provide wiring and connection diagrams where one or more items are interconnected.
 - b. Provide Authorized Service Agency Listings and representatives for each piece of equipment having electrical and/or mechanical components and 24-hour emergency call numbers.
 - c. Provide excel spreadsheet listing of all equipment utilizing equipment item numbering as per plan, include description of item, manufacturer, model, applicable warranty information and serial number of each unit. Sort spreadsheets into different tabs by restaurant/space areas. First tab to include item b. – Service Agency Listing index. Dealer may submit alternate cataloging process/system they have in place to accomplish same results – i.e., QR code stickers on equipment, etc.
 - d. See exhibit A – “*Service Agency Listing and Equipment Catalogue Record*” example for format.
 2. FSEC shall thoroughly instruct Owner in complete contents of manuals and service agencies and service process.

5.18 WARRANTIES (FOOD SERVICE EQUIPMENT CONTRACTOR)

1. All Equipment shall be warranted in writing from the date of final acceptance for a minimum period of one (1) year (regardless of the duration of the manufacturer's warranty) from defective parts, material, design, and workmanship, whether furnished by the Food Service Equipment Contractor (section 11 40 00) or any of his subcontractors. The Food Service Equipment Contractor (section 11 40 00) will be responsible for the cost of the affected equipment and/or its parts as well as any related costs of affected structural, electrical, mechanical, or other work requiring removal or replacement as a direct or indirect result of the failure of the equipment.
2. Compressors: Additional (4) four-year warranty.
3. No additional costs shall be transferred to the Owner. Neither the final certificate nor payment will relieve the Food Service Equipment Contractor of responsibility for honoring the warranty.
4. If the Food Service Equipment Contractor is requested to provide service necessary as a result of faulty utility connections, misuse or abuse, or other reason beyond the control of the Food Service Equipment Contractor, then they shall be reimbursed for the expenses and costs by the party making the original request for service.
5. Repair/Replacement of any individual unit to be limited to 3 major replacements parts before a new replacement unit to be provided in its place within the time frame of warranty. This is to ensure that there are no hidden damages present in the unit giving the owner a fully functioning equipment. This is limited to countertop and standalone equipment. Hoods, remote refrigeration systems, etc. to be provided with standard service requirements.
6. Initial Warranty Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of Food Service Equipment Contractor. This includes service in the event of failure of any system or equipment component or improper functioning of specified work during the warranty period.
 1. Perform warranty during normal working hours.
 2. Perform emergency callback service during normal working hours with response time of **two** hours or less.
 3. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of **two** hours or less.

5.19 EXHIBITS – SEE ATTACHED TO THIS SPECIFICATION:

1. Service Agency Listing and Equipment Catalogue Record

EXHIBIT 1 – SERVICE AGENCY LISTING						
Manufacturer	Item Description	Model #	Serial #	Warranty Info	Service Info.	
 BEVERAGE-AIR <small>MADE IN AMERICA'S KITCHEN SINCE 1947</small>	Reach-In Undercounter Freezer	UCF27A-23	10509428	Limited Warranty: 3 yr parts and labor. Additional 2 yr compressor warranty	NATIONAL REFRIG. A/C SVC. - 713-222-5282	
	Refrigerated Counter, Chest Base	VRTCS52-1	10502825			
	Refrigerated Pizza Table	DP46	10506621			
 Delfield	Reach-In Undercounter Refrigerator	UCR27A-23	10504475	(5) year compressor warranty, (1) year parts & (90) day labor warranty, standard, (1) Year service & labor warranty	Armstrong Repair Center - Houston 713-666-7100	
	Drop-In Cold Food Pan	NR143B	1303150001054			
	Drop-In Cold Food Pan	NR119B	1303150001173			
	Drop-In Hot Well	NR745-D	1303150000941			
 Frymaster	Spill Pot Fryer w/ Basket Lifts	M44SE-2BLC	1303GA0081	FRYPOT warranty - 4th year follow part only, standard. FRYPOT & ASSEMBLY warranty - 1 year parts and labor, 2nd and 3rd year part only, standard. CONTROLLER warranty - (1) One year parts and labor, standard. FENWAL THERMOSTAT warranty - (1) One year parts and labor, 2nd year part only, standard. ALL OTHER PARTS warranty - (1) One year parts and labor, standard	Armstrong Repair Center - Houston 713-666-7100	
 Garland	Countertop Griddle	GD-24G	1303100100712	One year limited parts and labor warranty	Armstrong Repair Center - Houston 713-666-7100	
	Charbroiler	GD-24RB	1303100101110			
 Glastender	Lattice Crisper	LC	134142864x	1 year parts & labor warranty	Armstrong Repair Center - Houston 713-666-7100	

2. CFESA Installation Form

EXHIBIT 2 – CFESA INSTALLATION FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Installation Form	
Date of Installation _____ Make _____ Model _____ Serial _____ First Visit YES NO Project Manager _____	Customer Name _____ Billing Address _____ Phone _____ Fax _____ Servicer Name _____ Address _____ Phone _____ Fax _____ CFESA Installer # _____
Sold By _____ Address _____ Phone _____ Fax _____	
Note: It is the recipient's responsibility to report any concealed or non-concealed damage to freight Company	
Does the equipment, shipping container or any accessories show signs of shipping damage? _____ If so, describe damage _____ Has a freight claim been filed? _____ Has the unit been operated prior to checkout? _____ Is unit located under the exhaust hood? _____ If so, provide Make & Model _____ Verify that the location does not have a negative air pressure situation. Make up air present? _____ Verify there is no down draft present blowing into flue and/or bake chamber _____ Is unit level? _____ Is unit stacked? _____ If so, was a stacking kit used and is it secured properly? _____ Is the unit installed on legs or casters? _____ If casters, is a restraining device installed properly? _____ Type of energy supplied? _____ Rating plate energy specified? Gas _____ Elec _____ Phase _____ Steam _____ Water _____	
Gas Equipment	
Check gas connections and piping for leaks with soap test	
Measure and record pressure entering unit, static _____ and flow _____ What is the incoming pipe size? _____ How far away is the gas meter? _____ What is the gas meter flow rate? _____ Measure pressure at manifold with unit heating _____ Was there a regulator installed before the unit? _____ Is there a separate shut-off? _____ Check burner operation and adjust as necessary _____ Check pilots and bypass settings and adjust as necessary _____	
Electrical	
Note: If supplied voltages are not +/- 10% of the rated voltage stop and consult the factory. Operation under these conditions may void the equipment warranty	
Measure and record incoming voltage with unit off L1-N _____ L2-N _____ L3-N _____ L1-L2 _____ L2-L3 _____ Measure and record amp draw L1 _____ L2 _____ L3 _____ Are the incoming wires properly sized? _____ Does the unit have a separate grounding wire? _____ Does the unit have it's own electrical disconnect? _____ Is it properly sized? _____ Measure and record incoming voltage with unit on L1-N _____ L2-N _____ L3-N _____ L1-L2 _____ L2-L3 _____ L1-L3 _____	
ITEM NO. _____	

Place Service Agency Logo Here

Place Contact Information Here

Steam

Does the unit have a steam pressure regulator installed?
Measure and record incoming steam pressure Static _____ & Flow _____ What size is the supply piping? _____
Measure and record operating flow pressure _____ Check for and repair any leaks _____

Water

If water quality test is required, provide results; PH _____ Hardness _____ Alk _____

Tcolor _____ Fcolor _____
Is there a pressure reg. Installed? _____ What is the incoming water temp _____, pressure? _____
Turbidity Reading _____ Flush Interval Time _____ Flush Duration Time _____ TransMembrane Pressure _____
What is the size of the drain piping? _____ How long is the drain run? _____ # of elbows? _____
How far is the unit located from the nearest floor drain? _____ Is the unit installed over a floor drain? _____

Check all gauges, timers valves and switches for proper operation _____
Proper temperatures achieved? _____
Check any motors for proper operation and calibrate if necessary
Check thermostat operations and calibrate if necessary
Verify all fitting parts operate normally; doors, gaskets and racks

Is kitchen manager present? _____ How many kitchen staff are present? _____
Operating instruction manual given to owner/operator? _____ Managers Name _____
Service agency sticker placed on unit with contact # _____
Customer has been informed of preventative maintenance requirements? _____ Preventative Maintenance offered? _____
Test with customer's product performed? _____ Results satisfactory? _____
If not, explain _____

Warranty terms have been explained? _____

Customer's Approval _____

Technician _____

Date _____

Additional Comments:

ITEM NO. _____



3. CFESA Start-Up Performance Check Form

EXHIBIT 3 – START-UP PERFORMANCE CHECK FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Start-Up/Performance Check Form	
<p>It is important that we understand and are prepared for the job conditions prior to our visit. To avoid any confusion and possible charges for a second start up attempt, please check off the items which apply and return promptly. Any requests for service outside that which is factory specified in the start up will be the responsibility of the customer and/or dealer requesting such service.</p> <p>Equipment has or will be demonstrated by an authorized factory representative. Please note that we are not trained to demonstrate equipment.</p>	
Recommended Start-Up Request	
Dealer: _____	Job Name: _____
Contact: _____	Address: _____
Manufacturers: _____	City, State, Zip: _____
Models: _____	Phone: _____
Date of Installation: _____	Fax: _____
Preferred day/time for start-up: _____	Contact: _____
	Installed By: _____
	Cert. of occupancy: Yes _____ No _____
Utilities hooked up and operating: (check those that apply)	
• Gas:	Yes _____ No _____
• Elec:	Yes _____ No _____
• Steam:	Yes _____ No _____
• Water:	Yes _____ No _____
Supplied voltage and phase match nameplate:	Yes _____ No _____
Exhaust hoods and fire suppression system tested:	Yes _____ No _____
Fryers have been boiled out and oil is available for testing:	Yes _____ No _____
I verify that the information above represents that this project is ready for start-up.	
Company: _____	Date: _____
Signature: _____	
Recommended Performance Check Request	
Dealer: _____	Job Name: _____
Contact: _____	Address: _____
Manufacturers: _____	City, State, Zip: _____
Models: _____	Phone: _____
Date of Installation: _____	Fax: _____
Date unit was put into service: _____	Contact: _____
Preferred day/time for check out: _____	Installed By: _____
Please list any problems or concerns with equipment: _____	Hours per day of operation: _____
I verify that the information above represents that this project is ready for performance check.	
Dealer: _____	Date: _____
Signature: _____	
ITEM NO. _____	
	

4. MAFSI Demonstration Form

EXHIBIT 4 – MAFSI DEMONSTRATION REQUEST FORM																																																				
Place Service Agency Logo Here	Place Contact Information Here																																																			
Recommended Demonstration Request Form																																																				
Dealer: _____	Job Name: _____																																																			
Contact: _____	Address: _____																																																			
Manufacturers: _____	City, State, Zip: _____																																																			
_____	Phone: _____																																																			
_____	Fax: _____																																																			
_____	Contact: _____																																																			
<p>Providing a proper demonstration may require more time for various equipment and/ or systems. Please allocate _____ to ensure a complete and professional demonstration.</p> <p>It is important that we understand and are prepared for the job conditions prior to our visit. To avoid any confusion and possible charges for a second demonstration, please check off the points that apply and return promptly.</p> <ol style="list-style-type: none"> <li style="margin-bottom: 10px;"> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.</td> <td style="width: 10%; text-align: center;">Yes _____</td> <td style="width: 30%; text-align: center;">No _____</td> </tr> </table> <li style="margin-bottom: 10px;"> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">2. Appointments set for demonstration(s):</td> <td style="width: 10%; text-align: center;">Yes _____</td> <td style="width: 30%; text-align: center;">No _____</td> </tr> <tr> <td></td> <td style="text-align: center;">Date _____</td> <td style="text-align: center;">Time _____</td> </tr> </table> <li style="margin-bottom: 10px;"> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">3. Utilities hooked up and operating:</td> <td style="width: 10%; text-align: center;">Yes _____</td> <td style="width: 30%; text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Gas</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Steam</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Water</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Electric voltage and phase checked:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Gas leak tested by utility or plumber:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Steam pressure regulators adjusted:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Boilers running:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Hoods and Fans operational:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• UDS Operating</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td>Accessories and supplies available:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Oil in Fryers for Filtration:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> <tr> <td style="padding-left: 20px;">• Filters, Cleaners, Tools:</td> <td style="text-align: center;">Yes _____</td> <td style="text-align: center;">No _____</td> </tr> </table> <li style="margin-bottom: 10px;"> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">4. Appropriate set of instruction manuals with unit to be demonstrated?</td> <td style="width: 10%; text-align: center;">Yes _____</td> <td style="width: 30%; text-align: center;">No _____</td> </tr> </table> 		1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.	Yes _____	No _____	2. Appointments set for demonstration(s):	Yes _____	No _____		Date _____	Time _____	3. Utilities hooked up and operating:	Yes _____	No _____	• Gas	Yes _____	No _____	• Steam	Yes _____	No _____	• Water	Yes _____	No _____	Electric voltage and phase checked:	Yes _____	No _____	Gas leak tested by utility or plumber:	Yes _____	No _____	Steam pressure regulators adjusted:	Yes _____	No _____	• Boilers running:	Yes _____	No _____	Hoods and Fans operational:	Yes _____	No _____	• UDS Operating	Yes _____	No _____	Accessories and supplies available:	Yes _____	No _____	• Oil in Fryers for Filtration:	Yes _____	No _____	• Filters, Cleaners, Tools:	Yes _____	No _____	4. Appropriate set of instruction manuals with unit to be demonstrated?	Yes _____	No _____
1. Equipment has been started up by an authorized service technician to ensure proper hook-up by the trades. Please note that due to limitations in our liability policy we do not start up equipment, we only perform demonstrations.	Yes _____	No _____																																																		
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4. Appropriate set of instruction manuals with unit to be demonstrated?	Yes _____	No _____																																																		
<p>I verify that the information above represents that this project is ready for demonstration.</p> <p>Dealer: _____ Date: _____</p> <p>Signature: _____</p>																																																				
ITEM NO. _____																																																				

5. MAFSI Demonstration Inspection Report

EXHIBIT 5 – MAFSI DEMONSTRATION INSPECTION REPORT FORM	
Place Service Agency Logo Here	Place Contact Information Here
Recommended Demonstration Inspection Report	
Dealer: _____	Customer: _____
Address: _____	Address: _____
City, State, Zip: _____	City, State, Zip: _____
Phone: _____	Phone: _____
Fax: _____	Fax: _____
Date Performed: _____	
Manufacturer(s): _____	

Model: _____	Serial No.: _____
Model: _____	Serial No.: _____
Model: _____	Serial No.: _____
1. Utilities connected:	
• Steam	Yes _____ No _____
• Gas	Yes _____ No _____
• Electricity	Yes _____ No _____
• Water	Yes _____ No _____
• Drain	Yes _____ No _____
Pilots operational:	Yes _____ No _____
Start-Up/Performance Check Done:	Yes _____ No _____
Calibrated/Fired Off:	Yes _____ No _____
Authorized Service Agent:	Yes _____ No _____
Operational/Maintenance Manual:	Yes _____ No _____
All Accessories with Units:	Yes _____ No _____
Installation Notes: _____	

Type of Equipment Demonstrated: _____	

• Reviewed Operation and Controls:	Yes _____ No _____
• Discussed Product Applications:	Yes _____ No _____
• Reviewed Daily and Periodic Cleaning/Maintenance:	Yes _____ No _____
• Provided Authorized Service/Warranty/Information:	Yes _____ No _____
Demonstration Notes/Follow-up: _____	

I verify that the equipment listed above has been demonstrated to my satisfaction.	
Customer: _____	Date: _____
Signature: _____	Manufacturers' Rep: _____
ITEM NO. _____	
	

6. General Responsibilities Outline

EXHIBIT 6 – GENERAL RESPONSIBILITIES OUTLINE FORM				
GENERAL RESPONSIBILITIES				
ITEM	BARING INDUSTRIES	OTHER TRADES	Provide	Install
General				
deliver, uncrate and set in place equipment				
wall blocking				
all floor, wall, roof penetrations, sleeving and fireproofing/insulation				
Electrical				
all final electrical connection and interconnection to equipment room building services				
all control wiring				
all floor, wall, roof penetrations, sleeving and fireproofing/insulating/re-sealing				
Mechanical				
all final plumbing connections and interconnections to equipment from building services				
all plumbing materials including pipes, traps, stops, valves, fittings, shut-offs, water hammer arrestors, pressure reducing valves, etc. for a complete and operable system				
all floor, wall, roof penetrations, sleeving and fireproofing/insulating/re-sealing				

NOTES:
 1. See Baring coordination drawings for location
 2. Maximum gas pressure not to exceed 8" WC natural gas. **Verify gas pressure requirements w/ Baring for LP service**

7. Project Plan Outline

EXHIBIT 7 – PROJECT PLAN OUTLINE FORM																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>DATE</td><td></td></tr> <tr><td>PROJECT MGR</td><td></td></tr> <tr><td>PROJECT NAME</td><td></td></tr> <tr><td>PROJECT #</td><td></td></tr> <tr><td>AREA</td><td></td></tr> <tr><td>NO. OF AREAS</td><td></td></tr> <tr><td>NUMBER OF ITEMS IN AREA</td><td></td></tr> </table>							DATE		PROJECT MGR		PROJECT NAME		PROJECT #		AREA		NO. OF AREAS		NUMBER OF ITEMS IN AREA	
DATE																				
PROJECT MGR																				
PROJECT NAME																				
PROJECT #																				
AREA																				
NO. OF AREAS																				
NUMBER OF ITEMS IN AREA																				
PROJECT PLAN																				
DESCRIPTION	WEEKS	DURATION/DAYS	START	FINISH																
PROJECT REVIEW																				
ENGINEERING																				
SUBMITTAL APPROVAL																				
PURCHASING																				
ORDER WIC																				
FABRICATE WIC																				
SHIP WIC																				
INSTALL WIC																				
ORDER EXHAUST HOODS																				
FABRICATE EXHAUST HPPDS																				
SHIP EXHAUST HOODS																				
INSTALL EXHAUST HPPDS																				
DAYS HOODS/WIC PRIOR TO EQUIPMENT																				
ORDER REFRIGERATION																				
FABRICATE REFRIGERATION																				
SHIP REFRIGERATION																				
REFRIGERATION PIPING INSTALL																				
FINAL REFRIGERATION HOOK UP																				
ORDER CUSTOM FAB																				
SHIP CUSTOM FAB																				
SHIP CUSTOM FAB																				
INSTALL CUSTOM FAB																				
ORDER EQUIPMENT BUYOUT																				
EQUIPMENT SHIP																				
EQUIPMENT TO WAREHOUSE																				
EQUIPMENT SHIP																				
EQUIPMENT INSTALL																				
UTILITY CONNECTION																				
FRIESYSTEM INSTALL																				
PUNCH LIST																				
ANSUL TEST																				
BOH																				
STARTUP																				
TURNOVER																				
TRAINING																				

8. Submittal Log & Process

EXHIBIT 8 – SUBMITTAL LOG & PROCESS FORM				
				
<p>The following is our submittal log, record of all submittals we have received to date and the ones we are expecting to review. Please note, written 11 40 00 specifications have a very detailed submittal process, this is spelled out in execution section 5.6/C. You can also find more information in our Dealer Resource Workgroup with examples of submittals, etc. If you don't have access to this workgroup, please submit a request to info@sconoshg.com</p>				
SUBMITTAL NUMBER	SUBMITTAL TYPE/SECTION	DATE SUBMITTED	DATE APPROVED	NOTES
BASIC PLANS & CUTS:				
	Equipment Plan & Rough-Ins <i>(needs to be submitted with cutbook)</i>			
	Equipment Cutbook <i>(needs to be submitted with equipment plans)</i>			
ENGINEERED SYSTEMS:				
	Walk-in Boxes			
	Exhaust Hoods			
	Remote Rack Systems			
	Custom Stainless-Steel Fabrication			
	FS Millwork			
	Bar - Crown			
	Cooking Suites			
	Cook Chill Systems			
SPECIALTY EQUIPMENT:				
	Hearth Ovens			
	Sneezeguards			
	Kaliber			
	Custom Display Cases - Ie. Structural Concepts			
	PowerSoak			
300 WEST CHESTNUT STREET, SUITE 201, EPHRATA, PA 17522 (717) 733-5810				

SUBMITTAL EXPECTATIONS REMINDER:

- Submittals are to be coordinated between all engineered systems by FSEC before submitting for review. FSEC is to take ownership of all submittals.
- Review all shop drawings internally prior to submitting to SHG, especially those that are typically auto generated and are not accurate. SHG will reject submittals if they are found to be completely off and not line up with project.
- Submit digital copies for review, do not submit hard copies
- Submittals to go through proper channels, GC, Developer, Owners Rep, Architect, Consultant, etc - do not submit them directly to SHG.
- All fabricators involved should be aware that the project has bought the details specified and the design team will be conducting site inspection and will require that everything gets replaced that does not conform to those details. This is related to Stainless Steel custom fabrication and Food service Millwork. Submittals should reflect all of the details and how they intend to be constructed. Submittals without those details will be rejected for resubmission.
- Equipment Plans should not be submitted without equipment cutbooks or vice versa. Both need to be submitted together for comprehensive submittal review.
- Obtain copies of the latest architectural plans from architect prior to beginning the dimensioned rough-in submittal plans. Submittals are to be based off latest set of drawings, including all addendum/revision released.
- Feel free to request CAD backgrounds for use in preparation of your submittals. Please note, we will not provide rough-in CAD exports, we will provide equipment background. Due diligence must be done by the dealer and prepare all rough-in connection points. Digital files will be released once release form is filled out. Please see Release Forms Section ([link here](#))
- All shop drawings are to be submitted to scale or they will be rejected. Hand drawn shop drawings will be rejected.
- Shop drawings to include all equipment, including by others for proper spacing verification. Especially millwork shop drawings. Do not submit millwork only with gaps. Exact actual equipment to be shown and how the millwork is constructed around it for proper fabrication, reinforcement and clearances.
- Confirm all utilities requirements for Owner/Vendor provided equipment.
- Confirm all and any special sizing and verifications, like plate sizes
- Shop Drawings should not read "confirm" or "verify" - you the dealer as part of the submittal process needs to close those gap via formal RFI's if need or site survey dimensions or dictate a hold dimension on shop drawings if need be.
- All Equipment plans and rough-in drawings to utilize FS design corresponding item numbers. Do not create your own numbering system.
- Shop Drawing submittal to have a "General Responsibility Outline" sheet defining roles and responsibility for all relevant project scope. Refer to SHG Exhibit 6 Form, feel free to replicate and update as relevant.
- Submittals are to be separated out, per specifications. Not lumped together as (1) large submittal file

SCOPOS Hospitality Group, Ephrata, PA

9. VE & Alternate Product Certification Form

EXHIBIT 9 – VE & ALTERNATE PRODUCT CERTIFICATION FORM															
<div style="display: flex; align-items: center; margin-bottom: 20px;">  </div> <h3 style="text-align: center; margin: 0;">VE & Alternate Product Certification Form</h3> <p style="margin: 10px 0;"><i>Alternates or substitutions shall be considered only at the time of bidding. It will be assumed and expected that the base bid included the price for the manufacturer and model number exactly as specified.</i></p> <p style="margin: 10px 0;"><i>If and when project circumstances require alternates to be considered due to scheduling or budgets, dealer is to fill out this form for product comparison and validation before an alternate can be accepted.</i></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 5%; text-align: center; vertical-align: top; padding: 5px;">1</td> <td style="padding: 5px;">Explain goal and purpose of substitution:</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">2</td> <td style="padding: 5px;">Provide cost difference, savings of using this product over specified product:</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">3</td> <td style="padding: 5px;">Provide proof that owner is receiving this savings and how it is being credited back towards the project:</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">4</td> <td style="padding: 5px;">Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">5</td> <td style="padding: 5px;">If a custom fabrication item, such as a spec drawing showing products engineered to project needs to be provided. Please note spec conditions for these items in 11 400 00 Section 1.02/B</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;">6</td> <td style="padding: 5px;">GC - General Contractor to carefully evaluate acceptance of alternate manufacturers for utility changes and requirements in MEP design systems for any impact. Please note the following spec 11 400 00 Section 1.02/F</td> </tr> <tr> <td style="text-align: center; vertical-align: top; padding: 5px;"></td> <td style="padding: 5px;">The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.</td> </tr> </table>		1	Explain goal and purpose of substitution:	2	Provide cost difference, savings of using this product over specified product:	3	Provide proof that owner is receiving this savings and how it is being credited back towards the project:	4	Provide proof that original specified manufacturer has been approached and given an opportunity to be competitive.	5	If a custom fabrication item, such as a spec drawing showing products engineered to project needs to be provided. Please note spec conditions for these items in 11 400 00 Section 1.02/B	6	GC - General Contractor to carefully evaluate acceptance of alternate manufacturers for utility changes and requirements in MEP design systems for any impact. Please note the following spec 11 400 00 Section 1.02/F		The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.
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2	Provide cost difference, savings of using this product over specified product:														
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	The Food Service Equipment Contractor (section 11 40 00) shall bear all additional expenses incurred due to dimensional or field utility changes occurring as a result of the acceptance of alternate proposals. Any change orders generated as a result of higher utility requirements for the base designed item will be rejected.														

7	Provide a detailed side by side features and product comparison listing all accessories, properties, certifications and listing such as NSF, UL, etc. in spreadsheet format. Clearly list out any features that alternate manufacturer is not being able to meet. Spec sheets of both, original and alternate to be provided in the package. Use form example below.			
Requested Substitution: (example)				
ITEM #	DESCRIPTION	SPECIFIED	PROPOSED ALTERNATE	NOTES/COMMENTS
K100	DESCRIPTION	Combi Oven	Combi Oven	
	QTY.	2	2	
	MANUF.	Rational	Alto-Shaam	
	MODEL	SCC 62NG	CTP7-20G	
	ACCESSORIES (LIST ALL)	(1) CAP - Chef Assistance Program	NOT AVAILABLE	
		(1) 9999.9951 - RCI Rational Certified Installation	(2) Installation Program:	
		(1) 9999.9812 - Pre-Installation Site Survey	Included with Installation Program	
		(1) 9999.9957 - RCI Rational Certified Installation	Included with Installation Program	
		(2) 8720.1560US - Installation Kit	(2) 5021522 - Installation Kit	
		(2) 56.00.210A - Cleaner tablet (100)	(2) CE-36354 - CombiClean® Cleaning Tabs (90)	
		(2) 56.00.562 - Care Tablets (150)	NOT AVAILABLE	
		(1) 60.71.936 - Combi-Duo Stacking kit	(1) 5016710 - Stacking Hardware	
		(1) 9999.9959 - RCI Rational Certified Installation	Included with Installation Program	
		(2) 87.00.521US - Wearable Parts Kit	NOT AVAILABLE	
		(6) 6010.2101 - Shelf, stainless steel	(6) SH-22584 - Shelf, stainless steel wire	
		(2) - 6015.1103 - Gastronorm Perforated Baking Tray, 2/1 size, 25-5/8" x 20-7/8", aluminum with TriLax® coating	NOT AVAILABLE	
		(2) 6013.1103 - Gastronorm Baking Tray, 1/1 GN, 12-3/4" x 20-7/8", aluminum with Trilax coating	NOT AVAILABLE	
		(2) 6013.2103 - Gastronorm Baking Tray, 2/1 GN, 25-5/8" x 20-7/8", aluminum with Trilax coating	NOT AVAILABLE	
		(2) 60.73.314 - Cross & Stripe Grill Plate, 1/1 GN	(2) SH-26731 - Grilling Grate, 12" x 20"	
		(6) 60.73.216 - Tray, for large roasting/baking pan, steel carrier plate (1/1 GN)	NOT AVAILABLE	
		(6) 6019.1250 - CombiFry Basket, 1/2 GN, 12" x 10"	(2) BS-26730 - Fry Basket, 12" x 20"	
		(2) 60.71.157 - Multibaker, 1/1 GN, 12-3/4" x 20-7/8", 8 molds, TriLax Coating	NOT AVAILABLE	
		(2) - 6017.1002 - Muffin & Timbale moulds, 1/1 GN, 12-3/4" x 20-7/8"	NOT AVAILABLE	
		(2) 6017.1001 - Muffin & Timbale moulds, 2/1 GN, 25-5/8" x 20-7/8"	NOT AVAILABLE	
		(2) 6014.1102 - Gastronorm Container, 1/1 size, 12-3/4" x 20-7/8", 3/4" deep, granite enameled	NOT AVAILABLE	
		(2) Dormont 1675KIT48 - Blue Hose Gas Connector Kit	(2) Dormont 1675KIT48 - Blue Hose Gas Connector Kit	
		(1) Dormont PS - Wheel Placement	(1) Dormont PS - Wheel Placement	
	UTILITIES	208v/60/1-ph, 3.7 amps, NEMA 6-15P cCSAus, NSF, IPX5, ENERGY STAR® (Natural Gas)	208-240v/50/60/1-ph, 4.8-4.2 amps, 1.0kW, 14 AWG, NO cord or plug (Natural Gas)	
	WARRANTY	2 years parts and labor, 5 years steam generator warranty	All units come standard with a one-year warranty . An additional one-year warranty may be purchased at an additional charge. -	Dealer to provide additional 1-year warranty to match 2-year standard from Rational

	K101	DESCRIPTION			
		QTY.			
		MANUFACTURER			
		MODEL			
		ACCESSORIES (LIST ALL)			
		UTILITIES			
		WARRANTY			
<hr/>					
8.0	Acknowledgement				
8.1	Contractor and Subcontractor request that Owner, Architect & Consultant authorize the Requested Substitution described above. Contractor and Subcontractor, jointly and severally, make the following promises and representations about the Requested Substitution:				
8.2	The Requested Substitution complies in all respects with all applicable building laws, codes and regulations.				
8.3	Contractor and Subcontractor have carefully evaluated the Authorized Substitution and have determined that it complies in all respects with all requirements of the plans, specifications and contract documents for the Project except as specifically noted herein or in any attached exhibit-				
8.4	Contractor and Subcontractor clearly understand that any authorizations to make the Requested Substitution will be based entirely on the promises and representations of Contractor and Subcontractor and will not permit, authorize, or approve any deviation from the plans, specifications or contract documents except as specifically set forth herein or in any exhibit.				
8.5	Contractor and Subcontractor are completely and solely responsible for compliance of the Requested Substitution With all requirements of the Plans, specifications, and contract documents except as specifically set forth herein or in any attached exhibit. Contractor and Subcontractor expressly warrant that the Requested Substitution is merchantable and suitable for its intended purpose.				
	SIGNATURES:				
	DEALER:				
	GENERAL CONTRACTOR:				
	FILE WITH OWNER/OWNERS REP:				

END OF SECTION 11 40 00

SECTION 11 82 26

FACILITY WASTE COMPACTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes facility waste compactors and storage containers.
- B. Related Requirements:
 - 1. Section 14 91 82 "Trash Chutes" for waste chutes and diverters servicing waste compactors.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Inspect and discuss electrical, plumbing, and sprinkler roughing-in; equipment bases; and other preparatory work specified elsewhere.
 - 2. Review coordination of chute locations with waste compactors.
 - 3. Review sanitary requirements for water bibs, floor drains, and grease traps if required for Project to reduce decomposition and odors.
 - 4. Review haul routes of waste to the compactor, route of hauler's equipment, and protections along these routes that are specified elsewhere.
 - 5. Review required testing, inspection, and certification procedures.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include rated capacities, operating characteristics, furnished specialties and accessories, and finishes.
- B. Shop Drawings: For each waste compactor and for special components not dimensioned or detailed in manufacturer's product data.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Dimension chute locations that interface with waste compactors.
 - 4. Include location and installation details of automatic sprinkler in hopper of each chute-fed compactor.

5. Indicate equipment access points and required space for equipment service and operation.
6. Include setting drawings, templates, and instructions for installing anchor bolts and other anchorages.
7. Include diagrams for power, signal, and control wiring.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates: For each type of waste compactor.
- C. Field quality-control reports.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For waste compactors to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

PART 2 - PRODUCTS

2.1 FACILITY WASTE COMPACTORS

- A. Waste Compactor: Manufacturer's standard stationary compactor, complying with requirements; and with components, options, and accessories needed to provide a complete, functional system.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Marathon Equipment Company; a Dover company; RJ-250SC Self-Contained Compactor or a comparable product by one of the following:

- a. Compactors Inc.
- b. Precision Machinery Systems, Inc.
- c. Wastequip, Inc.
- d. Wilkinson Hi-Rise, LLC.

2. Source Limitations: Obtain from single source from single manufacturer.
3. Waste-Compactor Standards: ANSI Z245.21 including appendices and NFPA 82.
4. Waste-Container Standards: ANSI Z245.30 and ANSI Z245.60.
5. Rated Size (Volume): Minimum 1.31 cu. yd. (WASTEC Rating).
6. Clear Top Opening (Length by Width): Minimum 41 by 58 inches.
7. Cycle Time: Maximum 30 seconds.
8. Total Nominal Force: 39,900 lbs.
9. Total Maximum Force: 49,500 lbs.
10. Normal Ram Face Pressure: 27.1 psi.
11. Maximum Ram Face Pressure: 33.7 psi.

12. Ram Penetration: 6 inches.
13. Electrical Equipment:
 - a. Electric Motor 3/60/230-460: 10 hp.
 - b. Electrical Control Voltage: 120 VAC.
 - c. Panel Box Assembly.
 - d. All Circuits Fused: 2-Push Button Station, Start/Stop.
14. Hydraulic Equipment:
 - a. Hydraulic Pump: 3 gpm.
 - b. Normal Pressure: 1,850 psi.
 - c. Maximum Pressure: 2,300 psi.
 - d. Hydraulic Cylinders (2) - Bore: 4 inches.
 - e. Rod: 2.5 inches.
15. Finish: Manufacturer's standard.
 - a. Color: As selected by Architect from manufacturer's full range.

- B. Number of Storage Containers: Quantity as indicated on Drawings.

2.2 FABRICATION

- A. Fabricate waste compactors with smooth, eased, exposed edges to prevent injury to persons in vicinity of the equipment.
- B. Fabricate containers, hoppers, compaction chambers, unit bodies, and similar components of steel with welded joints. Reinforce with steel members sized and spaced to withstand impacts and pressures of normal operations and to prevent deformation.
- C. Fabricate equipment with replaceable parts at points of normal wear.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, clearances, service rough-ins, and other conditions affecting performance of the Work.
- B. Examine walls, floors, and chutes for suitable conditions where each waste compactor will be installed.
- C. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION OF FACILITY WASTE COMPACTORS

- A. Install each waste compactor according to manufacturer's written instructions, ANSI Z245.2, and ANSI Z245.21, including appendices.
- B. Install automatic sprinkler in hopper of each chute-fed compactor according to NFPA 82.
- C. Set waste compactors level, plumb, properly aligned, and securely in place. Anchor as required for secure operation.

3.3 FIELD QUALITY CONTROL

- A. Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative:
 - 1. Perform installation and startup checks according to manufacturer's written instructions.
 - 2. Test and adjust controls, alarms, and safeties. Replace damaged and malfunctioning controls and equipment.
 - 3. Verify unrestricted access to each firefighting access door or hose connection required by ANSI Z245.21 and NFPA 82 for compactor container(s).
 - 4. Verify correct locations, color coding, and legibility of caution, warning, and danger markings.
 - 5. Certify compliance with test parameters.
- C. A waste compactor will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain waste compactors according to manufacturer's written instructions and ANSI Z245.2.

END OF SECTION 11 82 26

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 12 - FURNISHINGS

12 36 23.13	PLASTIC-LAMINATE-CLAD COUNTERTOPS
12 36 40	STONE COUNTERTOPS
12 36 61	SIMULATED STONE COUNTERTOPS
12 48 13	ENTRANCE FLOOR MATS AND FRAMES

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SECTION 12 36 23.13

PLASTIC-LAMINATE-CLAD COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes plastic-laminate countertops.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product, including panel products, high-pressure decorative laminate, adhesive for bonding plastic laminate, and fire-retardant-treated materials.
 - 1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components.
 - 1. Show locations and sizes of cutouts and holes for plumbing fixtures, faucets, soap dispensers, and other items installed in plastic-laminate countertops.
 - 2. Apply AWI Quality Certification Program label to Shop Drawings.
- C. Samples for Verification:
 - 1. Plastic laminates, 8 by 10 inches, for each type, color, pattern, and surface finish.

1.4 INFORMATIONAL SUBMITTALS

- A. Woodwork Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.
- B. Evaluation Reports: For fire-retardant-treated materials, from ICC-ES.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance. Shop is a certified participant in AWI's Quality Certification Program.

- B. Installer Qualifications: Fabricator of products.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver countertops until painting and similar operations that could damage countertops have been completed in installation areas. If countertops must be stored in other than installation areas, store only in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.

1.7 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install countertops until building is enclosed, wet work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Where countertops are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 PLASTIC-LAMINATE COUNTERTOPS

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.
 - 1. Provide certificates from AWI certification program indicating that countertops, including installation, comply with requirements of grades specified.
 - 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- B. Grade: Custom.
- C. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
 - 1. **Manufacturers:** Subject to compliance with requirements, provide products by manufacturers indicated on Drawings or a comparable product by one of the following:
 - a. [Abet Laminati, Inc.](#)
 - b. [Formica Corporation.](#)
 - c. [Lamin-Art, Inc.](#)
 - d. [Panoram Industries International, Inc.](#)
 - e. [Wilsonart International](#); Div. of Premark International, Inc.
- D. Chemical-Resistant, High-Pressure Decorative Laminate: NEMA LD 3, Grade HGP, and as follows:

1. Laminate has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.9.5:
 - a. Nitric Acid (30 Percent): Moderate effect.
 - b. Sulfuric Acid (77 Percent): Moderate effect.
 - c. Hydrochloric Acid (37 Percent): Moderate effect.
 - d. Phosphoric Acid (75 Percent): No effect.
 - e. Acetic Acid (98 Percent): No effect.
 - f. Formaldehyde: No effect.
 - g. Ethyl Acetate: No effect.
 - h. Ethyl Ether: No effect.
 - i. Phenol (85 Percent): Moderate effect.
 - j. Benzene: No effect.
 - k. Xylene: No effect.
 - l. Butyl Alcohol: No effect.
 - m. Furfural: No effect.
 - n. Methyl Ethyl Ketone: No effect.
 - o. Sodium Hydroxide (25 Percent): No effect.
 - p. Sodium Sulfide (15 Percent): No effect.
 - q. Ammonium Hydroxide (28 Percent): No effect.
 - r. Zinc Chloride: No effect.
 - s. Gentian Violet: No effect.
 - t. Methyl Red: No effect.

2. Products: Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one of the following:
 - a. Formica Corporation; Lab Grade 840 Black.
 - b. Panolam Industries International, Inc.; Pionite Chemguard.
 - c. Wilsonart International, Div. of Premark International, Inc.; Chemsurf.

- E. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 1. As indicated by manufacturer's designations.

- F. Edge Treatment: Same as laminate cladding on horizontal surfaces.

- G. Core Material: Particleboard or medium-density fiberboard.

- H. Core Material at Sinks: Particleboard made with exterior glue or medium-density fiberboard made with exterior glue.

- I. Core Thickness: (2) layers of 3/4 inch full depth.
 1. Build up countertop thickness to 1-1/2 inches at front, back, and ends with additional layers of core material laminated to top.

- J. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.

2.2 PLASTIC-LAMINATE SHELVES

- A. Quality Standard: Unless otherwise indicated, comply with the "Architectural Woodwork Standards" for grades indicated for construction, installation, and other requirements.
1. Provide certificates from AWI certification program indicating that countertops, including installation, comply with requirements of grades specified.
 2. The Contract Documents contain selections chosen from options in the quality standard and additional requirements beyond those of the quality standard. Comply with those selections and requirements in addition to the quality standard.
- B. Grade: Custom.
- C. High-Pressure Decorative Laminate: NEMA LD 3, Grade HGS.
1. **Manufacturers:** Subject to compliance with requirements, provide products by manufacturers indicated on Drawings or a comparable product by one of the following:
 - a. [Abet Laminati, Inc.](#)
 - b. [Formica Corporation.](#)
 - c. [Lamin-Art, Inc.](#)
 - d. [Panoram Industries International, Inc.](#)
 - e. [Wilsonart International](#); Div. of Premark International, Inc.
- D. Chemical-Resistant, High-Pressure Decorative Laminate: NEMA LD 3, Grade HGP, and as follows:
1. Laminate has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.9.5:
 - a. Nitric Acid (30 Percent): Moderate effect.
 - b. Sulfuric Acid (77 Percent): Moderate effect.
 - c. Hydrochloric Acid (37 Percent): Moderate effect.
 - d. Phosphoric Acid (75 Percent): No effect.
 - e. Acetic Acid (98 Percent): No effect.
 - f. Formaldehyde: No effect.
 - g. Ethyl Acetate: No effect.
 - h. Ethyl Ether: No effect.
 - i. Phenol (85 Percent): Moderate effect.
 - j. Benzene: No effect.
 - k. Xylene: No effect.
 - l. Butyl Alcohol: No effect.
 - m. Furfural: No effect.
 - n. Methyl Ethyl Ketone: No effect.
 - o. Sodium Hydroxide (25 Percent): No effect.
 - p. Sodium Sulfide (15 Percent): No effect.
 - q. Ammonium Hydroxide (28 Percent): No effect.
 - r. Zinc Chloride: No effect.
 - s. Gentian Violet: No effect.
 - t. Methyl Red: No effect.
 2. **Products:** Subject to compliance with requirements, provide products indicated on Drawings or comparable products by one of the following:

- a. [Formica Corporation](#); Lab Grade 840 Black.
 - b. [Panolam Industries International, Inc.](#); Pionite Chemguard.
 - c. [Wilsonart International, Div. of Premark International, Inc.](#); Chemsurf.
- E. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
1. As indicated by manufacturer's designations.
- F. Edge Treatment: Same as laminate cladding on horizontal surfaces.
- G. Core Material: Particleboard or medium-density fiberboard.
- H. Core Material at Sinks: Particleboard made with exterior glue or medium-density fiberboard made with exterior glue.
- I. Core Thickness: (1) layer of 3/4 inch full depth.
- J. Backer Sheet: Provide plastic-laminate backer sheet, NEMA LD 3, Grade BKL, on underside of countertop substrate.

2.3 WOOD MATERIALS

- A. Wood Products: Provide materials that comply with requirements of referenced quality standard unless otherwise indicated.
1. Wood Moisture Content: 8 to 13 percent.
- B. Composite Wood and Agrifiber Products: Provide materials that comply with requirements of referenced quality standard for each type of woodwork and quality grade specified unless otherwise indicated.
1. Medium-Density Fiberboard: ANSI A208.2, Grade 130, made with binder containing no urea formaldehyde or Grade 130-Exterior Glue where indicated.
 2. Particleboard: ANSI A208.1, Grade M-2, made with binder containing no urea formaldehyde or Grade M-2-Exterior Glue where indicated.
 3. Softwood Plywood: DOC PS 1.

2.4 FIRE-RETARDANT-TREATED MATERIALS

- A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this article that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
1. Use treated materials that comply with requirements of referenced woodworking standard. Do not use materials that are warped, discolored, or otherwise defective.
 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.

3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
- B. Fire-Retardant-Treated Lumber and Plywood: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
1. Kiln dry lumber and plywood after treatment to a maximum moisture content of 19 and 15 percent, respectively.
 2. For items indicated to receive a stained or natural finish, use organic resin chemical formulation.
 3. Mill lumber after treatment within limits set for wood removal that do not affect listed fire-test-response characteristics, using a woodworking shop certified by testing and inspecting agency.
 4. Mill lumber before treatment and implement special procedures during treatment and drying processes that prevent lumber from warping and developing discolorations from drying sticks or other causes, marring, and other defects affecting appearance of treated woodwork.
- C. Fire-Retardant Particleboard: Panels complying with the following requirements, made from softwood particles and fire-retardant chemicals mixed together at time of panel manufacture to achieve flame-spread index of 25 or less and smoke-developed index of 25 or less per ASTM E 84.
1. For panels 3/4 inch thick and less, comply with ANSI A208.1 for Grade M-2 except for the following minimum properties: modulus of rupture, 1600 psi; modulus of elasticity, 300,000 psi; internal bond, 80 psi; and screw-holding capacity on face and edge, 250 and 225 lbf, respectively.
 2. For panels 13/16 to 1-1/4 inches thick, comply with ANSI A208.1 for Grade M-1 except for the following minimum properties: modulus of rupture, 1300 psi; modulus of elasticity, 250,000 psi; linear expansion, 0.50 percent; and screw-holding capacity on face and edge, 250 and 175 lbf, respectively.
 3. Products: Subject to compliance with requirements, provide one of the following:
 - a. Flakeboard Company Limited; Duraflake FR.
 - b. SierraPine; Encore FR.

2.5 ACCESSORIES

- A. Grommets for Cable Passage through Countertops: 2-inch OD, black, molded-plastic grommets and matching plastic caps with slot for wire passage, U.N.O on drawings.
1. Allow for (1) grommet for every 48 linear inches of countertop or as located by Architect.

2.6 MISCELLANEOUS MATERIALS

- A. Adhesives: Do not use adhesives that contain urea formaldehyde.

- B. Adhesive for Bonding Plastic Laminate: Unpigmented contact cement, Contact cement, or Resorcinol.
 - 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.
- C. VOC Limits for Installation Adhesives and Sealants: Use products that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - 1. Wood Glues: 30 g/L.
 - 2. Multipurpose Construction Adhesives: 70 g/L.
 - 3. Structural Wood Member Adhesive: 140 g/L.
 - 4. Architectural Sealants: 250 g/L.

2.7 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate countertops to dimensions, profiles, and details indicated. Provide front and end overhang of 1 inch over base cabinets.
- C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
 - 1. Notify Architect seven days in advance of the dates and times woodwork fabrication will be complete.
 - 2. Trial fit assemblies at fabrication shop that cannot be shipped completely assembled. Install dowels, screws, bolted connectors, and other fastening devices that can be removed after trial fitting. Verify that various parts fit as intended and check measurements of assemblies against field measurements before disassembling for shipment.
- D. Shop cut openings to maximum extent possible to receive appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 - 1. Seal edges of openings in countertops with a coat of varnish.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition countertops or shelving to average prevailing humidity conditions in installation areas.
- B. Before installing countertops or shelving, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming.

3.2 INSTALLATION

- A. Grade: Install countertops to comply with same grade as item to be installed.
- B. Assemble countertops and shelving and complete fabrication at Project site to the extent that it was not completed in the shop.
 - 1. Provide cutouts for appliances, plumbing fixtures, electrical work, and similar items.
 - 2. Seal edges of cutouts by saturating with varnish.
- C. Field Jointing: Where possible, make in the same manner as shop jointing, using dowels, splines, adhesives, and fasteners recommended by manufacturer. Prepare edges to be joined in shop so Project-site processing of top and edge surfaces is not required. Locate field joints where shown on Shop Drawings.
 - 1. Secure field joints in plastic-laminate countertops and shelves with concealed clamping devices located within 6 inches of front and back edges and at intervals not exceeding 24 inches. Tighten according to manufacturer's written instructions to exert a constant, heavy-clamping pressure at joints.
- D. Install countertops and shelves level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- E. Scribe and cut countertops and shelves to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- F. Fire-Retardant-Treated Wood: Handle, store, and install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- G. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.
 - 2. Secure backsplashes to tops with concealed metal brackets at 16 inches on center and to walls with adhesive.
 - 3. Install grommets at 48 inches on center as directed by Architect.
 - 4. Seal junctures of tops, splashes, and walls with mildew-resistant silicone sealant or another permanently elastic sealing compound recommended by countertop material manufacturer.

3.3 ADJUSTING AND CLEANING

- A. Repair damaged and defective countertops, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean countertops on exposed and semi-exposed surfaces. Touch up shop-applied finishes to restore damaged or soiled areas.

END OF SECTION 12 36 23.13

SECTION 12 36 40

STONE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes stone countertops.
- B. Related Requirements:
 - 1. Section 12 36 61 "Simulated Stone Countertops" for solid-surface and quartz-agglomerate countertops.

1.3 ACTION SUBMITTALS

- A. Product Data: For each variety of stone, stone accessory, and manufactured product.
- B. Shop Drawings: Include plans, sections, details, and attachments to other work.
 - 1. Show locations and details of joints.
 - 2. Show direction of veining, grain, or other directional pattern.
- C. Samples for Verification:
 - 1. For each stone type indicated, in sets of Samples not less than 12 inches square. Include two or more Samples in each set and show the full range of variations in appearance characteristics expected in completed Work.

1.4 INFORMATIONAL SUBMITTALS

- A. Material Test Reports:
 - 1. Sealant Compatibility and Adhesion Test Report: From sealant manufacturer indicating that sealants will not stain or damage stone.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For stone countertops to include in maintenance manuals. Include product data for stone-care products used or recommended by Installer, and names, addresses, and telephone numbers of local sources for products.

1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Shop that employs skilled workers who custom-fabricate stone countertops similar to that required for this Project, and whose products have a record of successful in-service performance.
- B. Installer Qualifications: Fabricator of stone countertops.

1.7 PRECONSTRUCTION TESTING

- A. Preconstruction Sealant Adhesion and Compatibility Testing: Submit to joint-sealant manufacturers, for compatibility and adhesion testing according to sealant manufacturer's standard testing methods and Section 079200 "Joint Sealants," Samples of materials that will contact or affect joint sealants.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store and handle stone and related materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, corrosion, breaking, chipping, and other causes.
 - 1. Lift stone with wide-belt slings; do not use wire rope or ropes that might cause staining. Move stone, if required, using dollies with cushioned wood supports.
 - 2. Store stone on wood A-frames or pallets with nonstaining, waterproof covers. Arrange to distribute weight evenly and to prevent damage to stone. Ventilate under covers to prevent condensation.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions of construction to receive stone countertops by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Stone: Obtain each variety of stone, regardless of finish, from a single quarry with resources to provide materials of consistent quality in appearance and physical properties.
 - 1. For stone types that include same list of varieties and sources, provide same variety from same source for each.

2. Make stone slabs available for examination by Architect.
 - a. Architect will select aesthetically acceptable slabs and will indicate aesthetically unacceptable portions of slabs.
 - b. Segregate slabs selected for use on Project and mark backs indicating approval.
 - c. Mark and photograph aesthetically unacceptable portions of slabs as directed by Architect.

2.2 GRANITE

- A. Material Standard: Comply with ASTM C 615.
- B. Varieties and Sources: Subject to compliance with requirements, provide granite variety indicated on drawings and in finish schedule.
- C. Cut stone from contiguous, matched slabs in which natural markings occur.
- D. Finish: Polished.

2.3 MARBLE

- A. Varieties and Sources: Subject to compliance with requirements, provide marble indicated on drawings and in finish schedule.
- B. Cut stone from contiguous, matched slabs in which natural markings occur.
- C. Finish: Polished.

2.4 ADHESIVES, GROUT, SEALANTS, AND STONE ACCESSORIES

- A. General: Use only adhesives formulated for stone and ceramic tile and that are recommended by their manufacturer for the application indicated.
- B. Water-Cleanable Epoxy Adhesive: ANSI A118.3, with a VOC content of 65 g/L or less.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. [Boiardi Products; a QEP company.](#)
 - b. [Bonstone Materials Corporation.](#)
 - c. [Bostik, Inc.](#)
 - d. [C-Cure.](#)
 - e. [Custom Building Products.](#)
 - f. [Jamo Inc.](#)
 - g. [Laticrete International, Inc.](#)
 - h. [MAPEI Corporation.](#)
 - i. [Mer-Krete Systems; ParexLahabra, Inc.](#)
 - j. [Prospec; Bonsal American; a division of Oldcastle Architectural Products Group.](#)
 - k. [Summitville Tiles, Inc.](#)
 - l. [TEC, Specialty Construction Brands, Inc.; an H. B. Fuller company.](#)

- C. Water-Cleanable Epoxy Grout: ANSI A118.3, chemical-resistant, water-cleanable, tile-setting and -grouting epoxy.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Boiardi Products; a QEP company.
 - b. Bostik, Inc.
 - c. C-Cure.
 - d. Custom Building Products.
 - e. Jamo Inc.
 - f. Laticrete International, Inc.
 - g. MAPEI Corporation.
 - h. Mer-Krete Systems; ParexLahabra, Inc.
 - i. Prospec; Bonsal American; a division of Oldcastle Architectural Products Group.
 - j. Summitville Tiles, Inc.
 - k. TEC, Specialty Construction Brands, Inc.; an H. B. Fuller company.
- D. Stone Adhesive: Two-part epoxy or polyester adhesive, formulated specifically for bonding stone to stone, with an initial set time of not more than two hours at 70 deg F, and with a VOC content of 65 g/L or less.
1. Color: Match stone.
 2. Products: Subject to compliance with requirements, provide one of the following:
 - a. Epoxy Adhesive:
 - 1) Akemi North America; Akepox.
 - 2) Axson North America, Inc; Akabond Epoxy.
 - 3) Bonstone Materials Corporation; Touchstone Last Patch.
 - b. Polyester Adhesive:
 - 1) Akemi; Platinum Clear Polyester Adhesive.
 - 2) Axson North America, Inc., Wood & Stone Company; Wood & Stone Polyester.
 - 3) Bonstone Materials Corporation; Gripstone L-200KG.
- E. Sealant for Countertops: Manufacturer's standard sealant of characteristics indicated below that complies with applicable requirements in Section 07 92 00 "Joint Sealants" and will not stain the stone it is applied to.
1. Mildew-Resistant Joint Sealant: Mildew resistant, single component, nonsag, neutral curing, silicone.
 2. Joint Sealant: Single component, nonsag, neutral curing, silicone; Class 25.
 3. Color: As selected by Architect from manufacturer's full range.
 4. Sealants shall have a VOC content of 250 g/L or less.
- F. Stone Joint Splines: Stainless-steel or brass washers approximately 1 inch in diameter and of thickness to fit snugly in saw-cut kerf in edge of stone units.

- G. Stone Cleaner: Specifically formulated for stone types, finishes, and applications indicated, as recommended by stone producer and, if a sealer is specified, by sealer manufacturer. Do not use cleaning compounds containing acids, caustics, harsh fillers, or abrasives.
- H. Stone Sealer: Colorless, stain-resistant sealer that does not affect color or physical properties of stone surfaces, as recommended by stone producer for application indicated.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. [Bostik, Inc.](#)
 - b. [Custom Building Products.](#)
 - c. [Hillyard, Inc.](#)
 - d. [HMK Stone Care System.](#)
 - e. [Miracle Sealants Company.](#)
 - f. [Stone Care International Inc.](#)
 - g. [Summitville Tiles, Inc.](#)
- I. Grommets for Cable Passage through Countertops: 2-inch OD, black, molded-plastic grommets and matching plastic caps with slot for wire passage, U.N.O on drawings.
 - 1. Allow for (1) grommet for every 48 linear inches of countertop or as located by Architect.

2.5 STONE FABRICATION, GENERAL

- A. Select stone for intended use to prevent fabricated units from containing cracks, seams, and starts that could impair structural integrity or function.
 - 1. Repairs that are characteristic of the varieties specified are acceptable provided they do not impair structural integrity or function and are not aesthetically unpleasing, as judged by Architect.
- B. Grade and mark stone for final locations to produce assembled countertop units with an overall uniform appearance.
- C. Fabricate stone countertops in sizes and shapes required to comply with requirements indicated.
 - 1. For granite, comply with recommendations in NBGQA's "Specifications for Architectural Granite."
 - 2. For marble, comply with recommendations in MIA's "Dimension Stone - Design Manual VI."
 - 3. Clean sawed backs of stones to remove rust stains and iron particles.
 - 4. Dress joints straight and at right angle to face unless otherwise indicated.
 - 5. Cut and drill sinkages and holes in stone for anchors, supports, and attachments.
 - 6. Provide openings, reveals, and similar features as needed to accommodate adjacent work.
 - 7. Fabricate molded edges with machines having abrasive shaping wheels made to reverse contour of edge profile to produce uniform shape throughout entire length of edge and with precisely formed arris slightly eased to prevent snipping, and matched at joints between units. Form corners of molded edges as indicated with outside corners slightly eased unless otherwise indicated.

8. Finish exposed faces of stone to comply with requirements indicated for finish of each stone type required and to match approved Samples and mockups. Provide matching finish on exposed edges of countertops, splashes, and cutouts.
- D. Carefully inspect finished stone units at fabrication plant for compliance with requirements for appearance, material, and fabrication. Replace defective units.

2.6 STONE COUNTERTOPS

- A. General: Comply with recommendations in MIA's "Dimension Stone - Design Manual VI."
- B. Nominal Thickness: Provide thickness indicated, but not less than 3 cm. Gage backs to provide units of identical thickness.
- C. Edge Detail: 1/8-inch eased edge, unless otherwise indicated.
- D. Splashes: Provide 3/4-inch- thick backsplashes and end splashes unless otherwise indicated.
 1. Height: 4 inches.
 2. Top-Edge Detail: Straight, slightly eased at corner, unless otherwise indicated.
- E. Joints: Fabricate countertops in sections for joining in field, with joints at locations indicated and as follows:
 1. Bonded Joints: 1/32 inch or less in width.
 2. Grouted Joints: 1/16 inch in width.
 3. Splined Joints: Accurately cut kerfs in edges at joints for insertion of metal splines to maintain alignment of surfaces at joints. Make width of cuts slightly more than thickness of splines to provide snug fit.
- F. Cutouts and Holes:
 1. Undercounter Sinks: Make cutouts for undercounter fixtures in shop using template or pattern furnished by fixture manufacturer. Form cutouts to smooth, even curves.
 - a. Provide vertical edges, slightly eased at juncture of cutout edges with top and bottom surfaces of countertop and projecting 3/16 inch into fixture opening.
 2. Counter-Mounted Cooktops: Prepare countertops in shop for field cutting openings for counter-mounted fixtures. Mark tops for cutouts and drill holes at corners of cutout locations. Make corner holes of largest radius practical.
 3. Fittings: Drill countertops in shop for plumbing fittings, undercounter soap dispensers, and similar items.
 4. Open Holes: Make holes scheduled to remain open in shop using as indicated on Drawings.
 - a. Exposed vertical edges, slightly eased at juncture of cutout edges with polished vertical edge(s).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates to receive stone countertops and conditions under which stone countertops will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of stone countertops.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of stone countertops.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Advise installers of other work about specific requirements for placement of inserts and similar items to be used by stone countertop Installer for anchoring stone countertops. Furnish installers of other work with Drawings or templates showing locations of these items.
- B. Before installing stone countertops, clean dirty or stained stone surfaces by removing soil, stains, and foreign materials. Clean stone by thoroughly scrubbing with fiber brushes and then drenching with clear water. Use only mild cleaning compounds that contain no caustic or harsh materials or abrasives. Allow stone to dry before installing.

3.3 CONSTRUCTION TOLERANCES

- A. Variation from Level: Do not exceed 1/8 inch in 96 inches, 1/4 inch maximum.
- B. Variation in Joint Width: Do not vary joint thickness more than one-fourth of nominal joint width.
- C. Variation in Plane at Joints (Lipping): Do not exceed 1/64-inch difference between planes of adjacent units.
- D. Variation in Line of Edge at Joints (Lipping): Do not exceed 1/64-inch difference between edges of adjacent units, where edge line continues across joint.

3.4 INSTALLATION OF COUNTERTOPS

- A. General: Install countertops by adhering to supports with water-cleanable epoxy adhesive.
- B. Do not cut stone in field unless otherwise indicated. If stone countertops or splashes require additional fabrication not specified to be performed at Project site, return to fabrication shop for adjustment.
- C. Set stone to comply with requirements indicated. Shim and adjust stone to locations indicated, with uniform joints of widths indicated and with edges and faces aligned according to established relationships and indicated tolerances. Install anchors and other attachments indicated or necessary to secure stone countertops in place.

- D. Bond joints with stone adhesive and draw tight as countertops are set. Mask areas of countertops adjacent to joints to prevent adhesive smears.
 - 1. Install metal splines in kerfs in stone edges at joints. Fill kerfs with stone adhesive before inserting splines and remove excess immediately after adjoining units are drawn into position.
 - 2. Clamp units to temporary bracing, supports, or each other to ensure that countertops are properly aligned and joints are of specified width.
- E. Complete cutouts not finished in shop. Mask areas of countertops adjacent to cutouts to prevent damage while cutting. Use power saws with diamond blades to cut stone. Make cutouts to accurately fit items to be installed, and at right angles to finished surfaces unless beveling is required for clearance. Ease edges slightly to prevent snipping.
- F. Install backsplashes and end splashes by adhering to countertops with stone adhesive. Mask areas of countertops and splashes adjacent to joints to prevent adhesive smears. Leave 1/16-inch gap between splashes and wall for filling with sealant. Use temporary shims to ensure uniform spacing.
- G. Install grommets at 48 inches on center as directed by Architect.
- H. Grout joints to comply with ANSI A108.10. Remove temporary shims before grouting. Tool grout uniformly and smoothly with plastic tool.
- I. Apply sealant to gaps specified for filling with sealant; comply with Section 07 92 00 "Joint Sealants." Remove temporary shims before applying sealant.

3.5 ADJUSTING AND CLEANING

- A. In-Progress Cleaning: Clean countertops as work progresses. Remove adhesive, grout, mortar, and sealant smears immediately.
- B. Remove and replace stone countertops of the following description:
 - 1. Broken, chipped, stained, or otherwise damaged stone. Stone may be repaired if methods and results are approved by Architect.
 - 2. Defective countertops.
 - 3. Defective joints, including misaligned joints.
 - 4. Interior stone countertops and joints not matching approved Samples and mockups.
 - 5. Interior stone countertops not complying with other requirements indicated.
- C. Replace in a manner that results in stone countertops matching approved Samples and mockups, complying with other requirements, and showing no evidence of replacement.
- D. Clean stone countertops no fewer than six days after completion of installation, using clean water and soft rags. Do not use wire brushes, acid-type cleaning agents, cleaning compounds with caustic or harsh fillers, or other materials or methods that could damage stone.
- E. Sealer Application: Apply stone sealer to comply with stone producer's and sealer manufacturer's written instructions.

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

END OF SECTION 12 36 40

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SECTION 12 36 61

SIMULATED STONE COUNTERTOPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Solid-surface-material countertops and backsplashes.
- 2. Quartz agglomerate countertops and backsplashes.

- B. Related Sections:

- 1. Section 12 36 40 "Stone Countertops."
- 2. Section 22 41 00 "Residential Plumbing Fixtures" for nonintegral sinks and plumbing fittings.

1.3 ACTION SUBMITTALS

- A. Product Data: For countertop materials and sinks.
- B. Shop Drawings: For countertops. Show materials, finishes, edge and backsplash profiles, methods of joining, and cutouts for plumbing fixtures.
- C. Samples for Verification: For the following products:
 - 1. Countertop material, 6 inches square.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Verify dimensions of countertops by field measurements after base cabinets are installed but before countertop fabrication is complete.

1.5 COORDINATION

- A. Coordinate locations of utilities that will penetrate countertops or backsplashes.

PART 2 - PRODUCTS

2.1 SOLID-SURFACE-MATERIAL COUNTERTOPS (Example: Corian)

- A. Configuration: Provide countertops with the following front and backsplash style:
 - 1. Front: As indicated on Drawings.
 - 2. Backsplash: Eased edge with 3/8-inch radius.
 - 3. Sidesplash / Endsplash: Matching backsplash.
- B. Countertops, provide one of the following:
 - 1. ½ -inch- thick, solid surface material laminated to 3/4-inch- thick particleboard with exposed edges faced with ½ -inch- thick, solid surface material.
- C. Backsplashes: 1/2-inch- thick, solid surface material.
- D. Fabrication: Fabricate tops in one piece with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
 - 2. Install integral sink bowls in countertops in the shop.

2.2 QUARTZ AGGLOMERATE COUNTERTOPS (Example: Cambria Quartz Products)

- A. Configuration: Provide countertops with the following front and backsplash style:
 - 1. Front: As indicated on Drawings.
 - 2. Backsplash: Eased edge with 3/8-inch radius.
 - 3. Sidesplash / Endsplash: Matching backsplash.
- B. Countertops: 3cm thick, quartz agglomerate with front edge built up with same material.
- C. Backsplashes: 2cm thick, quartz agglomerate.
- D. Fabrication: Fabricate tops in one piece with shop-applied edges unless otherwise indicated. Comply with quartz agglomerate manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 1. Fabricate with loose backsplashes for field assembly.
 - 2. Polish edges of exposed cut out holes.

2.3 ACCESSORIES

- A. Grommets for Cable Passage through Countertops: 2-inch OD, black, molded-plastic grommets and matching plastic caps with slot for wire passage, U.N.O on drawings.
 - 1. Allow for (1) grommet for every 48 linear inches of countertop or as located by Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install countertops level to a tolerance of 1/8 inch in 8 feet.
- B. Fasten countertops by screwing through corner blocks of base units into underside of countertop. Pre-drill holes for screws as recommended by manufacturer. Align adjacent surfaces and, using adhesive in color to match countertop, form seams to comply with manufacturer's written instructions. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 1. Install backsplashes and endsplashes to comply with manufacturer's written instructions for adhesives, sealers, fabrication, and finishing.
 - 2. Seal edges of cutouts in particleboard subtops by saturating with varnish.

END OF SECTION 12 36 61

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SECTION 12 48 13

ENTRANCE FLOOR MATS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Roll-up rail mats.

1.3 COORDINATION

- A. Coordinate size and location of recesses in concrete to receive floor mats and frames.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for floor mats and frames.

- B. Shop Drawings:

- 1. Items penetrating floor mats and frames, including door control devices.
- 2. Divisions between mat sections.
- 3. Perimeter floor moldings.

- C. Samples: For the following products, in manufacturer's standard sizes:

- 1. Floor Mat: Assembled sections of floor mat.
- 2. Tread Rail: Sample of each type and color.
- 3. Frame Members: Sample of each type and color.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For floor mats and frames to include in maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 ROLL-UP RAIL MATS

- A. Manufacturers: Subject to compliance with requirements, provide products by the following.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
 1. Balco, Inc.
 2. Pawling Corporation
 3. C/S Group.
 4. Durable Corporation.
 5. J. L. Industries, Inc.

2.2 FRAMES

- A. Recessed Frames:
 1. Recessed Frame: ½" recessed metal frame anchored on concrete substrate, attached to mat at all four edges, with welded corners.

2.3 FABRICATION

- A. Floor Mats: Shop fabricate units to greatest extent possible in sizes indicated. Unless otherwise indicated, provide single unit for each mat installation; do not exceed manufacturer's recommended maximum sizes for units that are removed for maintenance and cleaning. Where joints in mats are necessary, space symmetrically and away from normal traffic lanes. Miter corner joints in framing elements with hairline joints or provide prefabricated corner units without joints.
- B. Surface-Mounted Frames: As indicated for permanent surface-mounted installation, complete with corner connectors, splice plates or connecting pins, and postinstalled expansion anchors.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and floor conditions for compliance with requirements for location, sizes, and other conditions affecting installation of floor mats and frames.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Install surface-type units to comply with manufacturer's written instructions at locations indicated; coordinate with entrance locations and traffic patterns.
 - 1. Anchor fixed surface-type frame members to floor with devices spaced as recommended by manufacturer.

3.3 PROTECTION

- A. After completing frame installation and concrete work, provide temporary filler of plywood or fiberboard in recesses and cover frames with plywood protective flooring. Maintain protection until construction traffic has ended and Project is near Substantial Completion.

END OF SECTION 12 48 13

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Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 13 - SPECIAL CONSTRUCTION

13 11 00 SWIMMING POOL & EQUIPMENT
13 12 13 PERFORMANCE FOUNTAIN

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SECTION 13 11 00

SWIMMING POOL & EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This section of the specifications describes the swimming pool construction, swimming pool equipment installation, and service. Only contractors capable of meeting the qualifications and furnishing all work called for in this section shall be considered. All work called for in this section shall be, and remain throughout the warranty periods, the sole responsibility of this contractor.
- B. Preference will be given to qualified contractors supplying the complete recirculation and filtration equipment requirements for this job as specified so that all instruction, service and warranty claims will be handled by an experienced organization specializing in this work.

1.2 RELATED DOCUMENTS

- A. Drawings and General Provisions of Contract, including General Conditions and Division 1 of Specifications Sections, apply to work of this Section.
- B. The following Divisions contain requirements that relate to this Section:
 - 1. Mechanical/Electrical/Equipment Coordination: Division 01
 - 2. Earth Work and Pool Excavation: Division 02.
 - 3. Concrete Deck Work: Division 03.
 - 4. Ceramic Tile: Division 09
 - 5. Mechanical Systems and Equipment: Division 23
 - 6. Electrical: Division 26
 - 7. Plumbing Systems and Equipment: Division 22
- C. Applicable requirements of the following Specifications and Codes apply to Work of This Section.
 - 1. Connecticut Public Health Regulations and Guidelines for swimming pools 19-13-B33b.
 - 2. All local building and health codes.
 - 3. National Electrical Code (NEC).
 - 4. National Sanitation Foundation (NSF) Seal of Approval program.
 - 5. American Society for Testing and Materials (ASTM).
 - 6. Connecticut Department of Health Services.

1.3 CODES & REFERENCES

- A. All work in this division shall be according to applicable local, state and national codes and regulations.
- B. Provisions for Gunite: Comply with the provisions of the following codes, specifications and standards except where more stringent requirements are shown or specified.
 - 1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings".
 - 2. ACI 506.2 "Specifications for Materials, Proportioning and Application of Shotcrete".
 - 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".

- C. Provisions for plumbing work that is part of this section: Comply with the following reference standards except where more stringent requirements are shown or specified.
1. ANSI/ASTM D2564 – Solvent cements for polyvinyl chloride (PVC) plastic pipe and fittings.
 2. ANSI/ASTM D1785 – Standard specification for polyvinyl chloride (PVC) plastic pipe schedules 40, 80 and 120, NSF seal for potable water.
 3. ASTM B88 – Seamless copper water tube.
 4. ASTM D2855 – Practice for making solvent cemented joints with PVC pipe and fittings.
 5. Eslon Engineering Manual for plastic piping systems.

1.4 SUBSTITUTIONS:

- A. The Owner and the Architect have made a detailed investigation before selecting the specified swimming pool recirculation, filtration and other special pool equipment. All base bids shall include this equipment without substitution or equipment that has been pre-approved as an equal (See Substitutions Item A), since the operation and maintenance of this swimming pool facility has been predicated upon the specified equipment.
- B. The materials, products and equipment described in these specifications establish a standard of required function, dimension, appearance, quality, and quantity.
1. Refer to specification section 00200, item 3.3 for more information regarding equivalents and substitutions. Substitutions will not be allowed after the time bid unless specified products are discontinued.
 2. Any product offered as an equivalent must be a proven design with at least ten (10) installations in service for five (5) years.
 3. Such equivalent shall clearly indicate the product, manufacturer, and manufacturer model number.
 4. Substitutes submitted post bid will not be considered.
 5. All costs incurred due to re-designs, agency submittals, or approvals required, because of substitute equipment or materials shall be the sole responsibility of the Swimming Pool Contractor.
 6. Alternate equipment and or designs are not acceptable.

1.5 QUALITY ASSURANCE

- A. Contractor Qualifications:
1. The Contractor must have had at least five (5) years' experience in the construction of the type of swimming pool work herein specified and must list at least ten (10) pools of this type, each with a water surface area of not less than this pool which the Contractor has constructed and which, upon investigation, would be found to have been completed in a satisfactory manner and in operation at least three (3) years.
 2. Contractors wishing to bid this project, in addition to the list and information required in the preceding paragraph, shall submit, prior to entering into contract and if requested from the Owner/Architect/Engineer or Construction Manager:
 - a. Complete evidence that the Contractor has the facilities, equipment, personnel, etc., to complete all phases of this trade division.
 - b. Certification that the plans and specifications have been reviewed and that his bid will conform thereto.
- B. Performance Criteria: Certain sections of the specifications contain performance criteria rather than product descriptions.
1. It shall be the obligation of the Contractor to ensure that all criteria are satisfied and the burden of proof of conformance shall rest with the Contractor. The Architect/Engineer shall require complete calculations, past performance records and, if required, inspection

trips of similar facilities to substantiate conformance with these criteria. The Architect/Engineer shall be the sole judge of conformance and the Contractor is cautioned that he will be required to bid and provide a finished product meeting all the stated criteria and meeting or exceeding Department of Public Health requirements.

1.6 SUMMARY OF WORK INCLUDED

- A. The work of this section includes, but is not necessarily limited to the following:
1. Layout pools with benchmark and exact location supplied by the Owner/Architect.
 2. Perform bulk excavation of the pools and all required hand trimming.
 3. Provide and Install all required forms for pools construction.
 4. Furnish and install granular sub-base of #2 washed stone under each entire pool floor minimum 6" depth
 5. Provide three (3) sets of stamped structural pool drawings for each pool, including reinforcing steel schedules for approval.
 6. Construct monolithic gunite pool structure.
 7. Provide and Install the entire recirculation systems, as shown on the drawings.
 8. Install ceramic tile lane markings, as shown on the drawings.
 9. Provide and apply specified interior pool finishes.
 10. Provide and install complete filtration equipment and pool mechanical systems, including pumps and motors.
 11. Provide and install specified pool sanitizing equipment.
 12. Furnish and install the pool deck and accessory equipment shown and/or specified. All anchorages contained with the pool deck shall be furnished and installed by the pool contractor.
 13. Provide miscellaneous pool testing and cleaning equipment, etc., as specified.
 14. Provide instruction manuals and/or operating charts for all equipment.
 15. Provide three (3) days of start-up supervision and instruction upon project's completion.
 16. Provide start-up chemicals.

1.7 RELATED WORK SPECIFIED ELSEWHERE

- A. Site access for heavy equipment;
- B. Disposal of excavated material;
- C. Stripping pool area, grading, backfilling, and any other area preparation that may be required prior to the start of pool construction;
- D. Construction and backfill of all foundations, equipment room walls, footings, sleeves openings, sumps or other penetrations in the equipment room and/or natatorium wall and closure of same as required for pool construction work;
- E. All General construction work not called for in this section, including dewatering of pool excavation, if necessary;
- F. Fresh water connection to filter, fill spout, or makeup water tank (see drawings) and waste water connection from filter as shown on the drawings;
- G. All backfill required for pool structure, main drain piping, etc., as required;
- H. Provide access to filter room for filter equipment;

- I. All electrical connections and pool or equipment grounding shall be by the Electrical Contractor. All controls shall be provided by the pool contractor and installed by the Electrical Contractor. The Electrical Contractor shall install all electrical equipment furnished by the Pool Contractor and shall provide all disconnect switches as indicated or required by codes;
- J. Provide 120 volt, 15-amp circuit with G.F.I. and wiring to water level controllers, solenoid valve and relay;
- K. Provide 120 volt, 15-amp circuit with G.F.I. for chemical feed system. Power to come through VFD so when main pump is off, chemical feed system is off;
- L. Provide 110 volt wiring between chemical control unit and chlorine pump & acid pump located in the chemical storage room;
- M. Grounding pool structures and all pool and deck equipment as per current N.E.C. Provide certificate of inspection when complete;
- N. Provide and install pool heaters or heat exchangers and piping from heaters to pool return to pool valve tees as specified in the mechanical section of the specifications;
- O. Provide dedicated 20 AMP GFI for Accutab; and
- P. Provide dedicated 20 AMP GFI for Acid-Rite.

1.8 DEFINITIONS:

- A. The term "pool" as used in this Section shall refer to the following:
 - 1. New gunite pool structure and all associated piping, equipment and systems.
- B. The term gunite as used in this Section shall refer to gunite for swimming pool construction only.

1.9 QUALITY OF MATERIALS

- A. Special attention is directed to the materials, products and equipment described in these specifications. They establish a standard of required function, dimension, appearance and quality.
- B. Where only one manufacturer's name is mentioned for a particular item of equipment or material, the Contractor's base bid shall be on that item.
- C. Where references are made to Federal Specifications, American Society for Testing and Materials, American Standards Association, American Institute of Steel Construction, Steel Institute, and similar associations, organizations and standards, it shall be construed to mean their current specifications and designations as amended as of the date of bid opening.

1.10 TESTING/FIELD QUALITY CONTROL

- A. This section requires the following tests be performed during construction of the project.
 - 1. Testing and Flushing of Pipe:
 - a. Contractor shall be responsible for discovering leaks and making necessary repairs.
 - b. Pressure piping: After the piece is laid, the joints completed, and the trench partially backfilled leaving joints exposed for examination, subject new lines to a hydrostatic

- pressure of not less than thirty-five pounds per square inch. Joints shall remain watertight under this pressure for a period of two hours. All air must be expelled from pipes prior to testing.
- c. Gravity lines: A water test shall be applied to all gravity drain piping system, either in their entirety or in sections. All openings shall be tightly plugged and each system filled with water and tested with at least a 10-foot head of water. The water shall be kept in the system or in the portion under test, for at least 15 minutes before the inspection starts. System shall be watertight at all joints.
 - d. Test results must be provided to the Architect/Engineer before covering the pipes.
 - e. Leaks shall be repaired and tested repeatedly until leakage or infiltration is approved.
 - f. The Contractor must adhere to the applicable provisions in the mechanical portions of the specifications for the installation of piping systems.
2. Water Treatment:
- a. Obtain a chemical analysis of the source/pool make-up water supply and submit to the Architect/Engineer prior to ordering water treatment systems.
 - b. Include the following:
 - c. Total alkalinity/PPM;
 - d. Calcium hardness/PPM;
 - e. Chlorine/PPM;
 - f. pH;
 - g. Iron; and
 - h. Copper.
 - i. Provide a list of required chemicals and an estimate of quantities required to the owner in sufficient time to allow the owner to purchase chemicals.
 - j. Treat and balance pool water prior to turnover of pool to the Owner (using chemicals provided by this Contractor).
 - k. Pool Water: balance to establish a total Alkalinity level of 60-125 PPM and calcium hardness level of 180-375 PPM (3 times alkalinity level).
 - l. Stabilize pool water to 3 PPM
3. Testing of Gunite:
- a. The Owner is to engage a laboratory to perform material evaluation tests, to design shotcrete mixes and to test installed work.
 - b. *Pre-Construction Testing:* Comply with the requirements of ACI 506.2 and as specified. Make 3 test panels at least 30 inches by 30 inches for each mix being considered and for each shooting position to be encountered in the project, complying with applicable provisions of ASTM C 1140. Make test panels by each application crew performing guniting work. Fabricate test panels to the same thickness as the structure to be gunited but not less than 6 inches.
 - 1) Provide the same reinforcement in the test panels as used in the structure, placed in at least half the panel to check for proper gunite/shotcrete placement and reinforcing steel.
 - 2) A minimum of five 3-inch cubes or 3-inch diameter core specimens from panels will be taken for testing. The average compressive strength of 3 cores taken from test panels must equal or exceed 82 percent of the specified compressive strength.
 - c. Testing During Construction: Gunite will be tested for compressive and flexural strength by one or more of the following methods:
 - 1) Test Panels: Gunned by shotcrete nozzleman who will do production work. One test panel with minimum dimensions of 30 by 30 inches by 6 inches, gunned in the same position as work represented, complying with applicable provisions of ASTM C 1140. Make the test panels once each shift or once for each 50 cu. yds. of shotcrete placed through nozzle, whichever is more frequent. Moist cure panels unless otherwise directed by the Architect. A

- minimum of three 3-inch, nominal-diameter cores or three 3-inch cubes will be cut from each panel.
- 2) Samples from In-Place Shotcrete: Three 3-inch, nominal-diameter cores from the structure will be cut and tested in accordance with ASTM C 42. Do not cut into steel reinforcement. A set of cores will be tested once each shift or once for each 50 cubic yards gunite/shotcrete placed through nozzle whichever is more frequent.
- d. Strength Evaluation: Shotcrete will be considered acceptable as follows:
- 1) Mean compressive strength of any group of cores taken from the structure or test panel equals or exceeds specified compressive strength with no individual core less than 75 percent of specified compressive strength.
 - 2) Mean compressive strength of any group of cores taken from the structure or test panel equals or exceeds 118 percent of the specified compressive strength with no individual cube less than 106 percent of the specified compressive strength.
- e. Installer's Qualifications: Prior to commencement of work, demonstrate that the proposed guniting personnel, materials and equipment are capable of batching, mixing, conveying and uniformly applying shotcrete in accordance with the specified requirements.
- 1) Use nozzle men having current certification in accordance with the guidelines of ACI 506.3R for the type of shotcrete required.

1.11 SUBMITTALS

A. Submittals Required.

1. Product Data: Provide Manufacturer's/Installer's written installation instructions as called for throughout this section.
2. The Contractor shall submit for approval to the Architect/Engineer complete lists, including descriptions, catalogs, cuts, etc. and when available dimensioned shop drawings of all material, fixtures and equipment to be furnished and installed under this specification. Submittals shall adequately and completely describe:
 - a. The equipment, including where necessary or requested complete construction and installation dimensions
 - b. Complete capacity and performance data
 - c. All accessory and auxiliary equipment
 - d. All pertinent details of manufacture.
 - e. Shop drawings for equipment shall be submitted and approval of shop drawing shall be obtained before proceeding with fabrication.
3. Certificates: Submit in duplicate a certificate from the manufacturer, properly attested, stating the material and construction comply with the requirements of the drawings and specifications. Certificates shall be furnished before the installation of the equipment.
4. Shop Drawings: Submit shop drawings required by this Section.
 - a. The drawings accompanying this specification are essentially diagrammatic in nature and show the general arrangement of all equipment, piping ductwork, services, etc. Because of the small scale of the drawings, it is not possible to show all offsets, fittings and accessories that may be required. The Contractor shall carefully investigate the structural and finish conditions of all his work, and shall arrange such work accordingly, furnishing all fittings, pipe and accessories that may be required to meet such conditions. Where conditions necessitate a rearrangement, the Contractor shall obtain the Architect/Engineer's approval. Locate all valves for maximum operation accessibility.
 - b. Before commencing any work, Contractor shall submit and obtain approval of shop drawings indicating all work called for in this division.

5. Valve Charts: Submit two copies of valve charts for each piping system, consisting of Isometric Drawings, or piping layouts showing and identifying each valve and describing its function to the Architect/Engineer for approval.
 - a. Upon completion of the Work, one copy of each chart sealed to rigid backboard with clear lacquer placed under glass and framed shall be hung in a conspicuous location in the equipment room.
6. Operation and Maintenance Manuals:
 - a. Submit to the Architect/Engineer four (4) copies at substantial completion of the project.
7. Furnish to the Owner/Architect/Engineer the following:
 - a. Product Data:
 - 1) Gunite Mix Design, if required
 - 2) Non-Shrink Grouts.
 - 3) PVC Water Stop, if required.
 - 4) Expansion/Construction Joint Materials.
 - 5) Caulking.
 - 6) Pumps and Strainers.
 - 7) Chemical Controller(s), Feeders and Storage Tanks.
 - 8) Valves.
 - 9) Gauges Thermometer and Flow Meter.
 - 10) Pool Water Test Kit.
 - 11) Each piece of Deck Equipment.
 - 12) Inlets, Main Drain Grating, Zero Depth Grating and Lights.
 - 13) Each piece of Safety Equipment.
 - 14) Each piece of Filtration equipment
 - 15) Each piece of Sanitation & Maintenance Equipment.
 - 16) Piping Materials.
 - 17) Wall sleeves And Seals for Piping.
 - 18) Tile Setting Materials and Joint fillers.
 - 19) UV Lamp spectral certificate: A spectral certificate shall be provided with each lamp to demonstrate spectral accuracy.
 - 20) Each component of the Pool timing system.
 - b. Shop Drawings:
 - 1) Piping
 - 2) Water Activities
 - 3) Filters
 - 4) Skimmers
 - 5) Ceramic Tile installation methods and patterns
 - 6) Built in equipment and accessories
 - 7) Filtration System
 - 8) Sanitation & Maintenance system
 - 9) Deck Equipment: Shop drawings detailing scoreboard, conduit and junction boxes.
 - c. Test Results:
 - 1) Dry gunite/shotcrete testing.
 - 2) Compaction
 - 3) Piping Pressure Testing.
 - d. Samples:
 - 1) Tile.
 - 2) Gratings.
 - e. Training – arrange for a day of training covering all systems and equipment.
 - f. Guarantees/Warranties:
 - 1) Standard (1) Year.
 - 2) Special (2) Year on Swimming Pool Structure.
 - 3) Special Equipment (1) Year
 - 4) Future (1) Day of Instruction and Operational Checkout.

- g. Close Out Documents:
 - 1) O & M Manuals.
 - 2) As Built Drawings.
 - 3) Owners Certification of Instruction.
 - 4) Extra Materials.

1.12 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials and equipment to the work site in original packages fully identified, with manufacturer's label. Store off ground and protect from weather with a suitable covering.
- B. Deliver cementations materials to work site in manufacturer's standard packages. Immediately upon deliver to work site, store in waterproof sheds. The Contractor shall provide sheds that are required. Nor cementations or other material that has become caked or hardened will be permitted in the work.
- C. Protect plastic pipe from exposure to chemicals i.e.: aromatic hydrocarbons, halogenated hydrocarbons and other esters and ketones that might attack the material. Protect all pipes from mechanical damage and long exposure to sunlight during storage.

1.13 WARRANTIES

- A. General Warranty: Provide one (1) year warranty covering all pool workmanship, materials, and equipment. Refer to Division 1 of the Specifications for additional requirements.
- B. Special Project Warranty on Swimming Pool Structure: The Contractor shall guarantee for two (2) years repair of the concrete/dry gunite/shotcrete pool structure covering any defects, cracks, and/or leaking in the pool shell.
 - 1. The warranty shall not cover damage to the pool attributable to corrosive action, excessive use of acid or other foreign materials during cleaning or for discoloration or other consequences resulting from improper or inadequate use of chemicals or other materials, or from neglect or misuse by the Owner, his agents or invitees.
 - 2. This warranty shall also be void unless pool is kept full of water at all times and if drained for cleaning purposes, does not remain empty for more than a 48-hour period, unless under supervision furnished by the Contractor.
- C. Skimmer Perimeter Recirculation System Guarantee: The equipment manufacturer shall guarantee in writing that if the system is operated in accordance with written instructions given and accepted by the Owner, it will perform in complete accord with the specifications.
- D. Sanitation and Maintenance System Warranty: The equipment shall be warranted in writing that when operated and maintained according to the manufacturer's operating instructions provided and accepted, it will perform in complete accord with these specifications.
 - 1. All components (excluding the UV arc tube) have a limited warranty to be free from defects in workmanship and materials for a period of 12 months from date of start-up or 18 months from date of shipment, whichever occurs first.
 - 2. UV arc tubes shall be warranted to operate for 4000 hours when operated continuously. A continuously operated UV arc tube that fails prior to 4000 hours of operation shall be replaced free of charge. Intermittently operated UV arc tubes (>1 on/off cycle per day) will be replaced free of charge should failure occur prior to 2000 hours and prorated between 2000 and 4000 hours.
- E. All standard manufacturer's warranties shall apply to all equipment and products provided by the Contractor.

1.14 JOB COORDINATION/PRECONSTRUCTION MEETING

- A. All bidding contractors are cautioned to clearly understand the limits of responsibility of the Contractor as detailed in these specifications in preparing their bid.
- B. Prior to a work start by either the Contractor or the General Contractor, a meeting will be held at the job site to establish work limits, job schedule and liaison among contractors and the Architect to ensure a coordinated construction process.
 - 1. All prime contractors and all pool system subcontractors, or manufacturer's representatives will be present at this meeting.
 - 2. Bring to everyone's attention special considerations requiring care in coordinating the work of those elements or systems.
 - 3. Proposals regarding schedule shall be coordinated with the overall construction schedule to maintain the milestone dates established therein.

PART 2 - PRODUCTS

2.1 DRY GUNITE SWIMMING POOL STRUCTURE

- A. Site Clearing: Prior to the start of pool construction, the site shall have been cleared by the General Contractor.
- B. Layout of Work: Before any excavation or construction shall be commenced the Pool Contractor, under the supervision of the Architect/General Contractor, shall place batter boards permanently locating the perimeter of all structures. The site shall be excavated to an even grade by the General Contractor and templates installed demoting the exterior line of the pool shell.
- C. Dimension and Designs:
 - 1. Structural designs shown on the pool drawings shall govern. Concrete surfaces against which new gunite is to be placed shall be thoroughly cleaned and slushed with neat cement. All horizontal or vertical steel shall pass through construction joints in such a manner that the full strength of the reinforcing will be developed.
 - 2. Tolerances: depth - 0 to 1"; vertical; walls - +/- 1/2" in 10 feet.
- D. Excavation and Grading:
 - 1. The machine excavation and hand trim by the Pool Contractor shall be carried on as one operation to aid in eliminating over excavation. In order to obtain an even wall line, radius templates shall be used. The floor area shall be fine graded by placing screeds at intervals.
 - 2. Any minor voids which may occur due to over-excavation or from boulders removed shall be filled in with a lean mixture of gunite or concrete. Any major deformations in the excavation caused by the removal of large boulders, collapse of earth of inadequate bearing capacity or cave ins caused by subsurface water conditions shall be repaired as required and filled with bank run gravel, crushed stone or a lean mix of gunite.
 - 3. Before completion of the pool excavation the beam at the top of the pool wall, which is a monolithic portion of the pool shell, shall be formed to the dimensions as shown on the drawings. A header shall be installed completely around the pool, the inside face of which shall be properly anchored in place. A taut cutting wire shall be anchored to ensure the dimensional integrity of the gunite structure. Cutting wires shall be placed at all intersections of pool radius and vertical walls and on floor elevation pins to ensure dimensional accuracy of the structure.

4. In the event of any delay in the construction or need for any additional material and labor required for corrective measures necessitated by underground conditions including but not limited to the removal of or re-routing of underground pipe lines and conduits, removal of masonry; removal, refilling and compaction of hardpan, quicksand or the pumping, control of, diversion or sealing off of water seepage; or for changes or additions to the pool structure or other installations necessitated by such conditions, the Pool Contractor shall be allowed an extra for such work.
- E. Place Fittings: The Pool Contractor shall place, before commencing the gunite work, all special pool fittings and receptacles that are to be embedded in the gunite and shall be responsible for their positioning in accordance with the drawings.
- F. Steel Reinforcing: All reinforcing steel shall be standard size deformed bars equal to the requirements of the "Standard Specifications for Billet Steel, Concrete Reinforcement", Intermediate Grad, Serial Designation A15, steel reinforcing bars, equal in the requirement of Serial Designation A615, adopted by the ASTM.
- G. Cement: All cement for gunite shall conform to the requirements of the "Standard specifications for Portland Cement: Serial Designation C 150 of the ASTM and shall be Type I or II (except where transit mixed cement is to be employed) and shall be delivered to the job site in the original packages or bulk tanker and adequately protected from the weather during storage.
- H. Dry Gunite:
 1. Gunite sand shall consist of clean, hard, sharp particles and moisture content shall not exceed 5% and the sand shall be well graded in size. Portions shall be one-part cement to four parts gunite sand by volume mixed dry for a period of not less than one (1) minute after materials have been added. Hydration shall occur at the nozzle of the cement gun using just enough water so that no slump shall occur in the gunite.
 2. The cement gun shall be equipped with an air pressure gauge and the air pressure at the end of the gun shall not be less than forty-five (45) pounds nor more than seventy (70) pounds when the hose is two hundred (200) feet in length or less. Air pressure shall increase five (5) pounds for each additional fifty (50) feet of material hose used but not more than three hundred (300) feet of material hose shall be used unless approved by the Architect.
 3. Water pressure at the nozzle shall be maintained at not less than fifteen (15) pounds greater than the air pressure at the gun. The structural gunite shall be applied against original undisturbed soil, thoroughly compacted earth or suitable forms that will not yield during applications of the gunite. Surfaces upon which the gunite is to be applied shall be shot at a right angle to the surface, starting at the bottom and continuing upward. It will be built up in layers of thicknesses that will not slump, allowing sufficient time between the placing of layers for initial set to take place. All loose fine aggregate or rebound shall be removed from the surface being gunited before placing succeeding layers and, whenever possible, the first layer shall entirely cover the reinforcing steel in order to secure it in its proper position.
- I. Quality Assurance:
 1. Codes and Standards: Comply with the provisions of the following coders, specifications and standards except where more stringent requirements are shown or specified.
 - a. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings".
 - b. ACI 506.2 "Specifications for Materials, Proportioning and Application of Shotcrete".
 - c. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".
 2. Testing Service: The Owner is to engage a laboratory to perform material evaluation tests, to design shotcrete mixes and to test installed work.

3. Pre-Construction Testing: Comply with the requirements of ACI 506.2 and as specified. Make 3 test panels at least 30 inches by 30 inches for each mix being considered and for each shooting position to be encountered in the project, complying with applicable provisions of ASTM C 1140. Make test panels by each application crew performing gunite/shotcrete work. Fabricate test panels to the same thickness as the structure to be gunited/shotcreted but not less than 6 inches.
 - a. Provide the same reinforcement in the test panels as used in the structure placed in at least half the panel to check for proper gunite/shotcrete placement and reinforcing steel.
 - b. A minimum of five 3-inch cubes or 3-inch diameter core specimens from panels will be taken for testing. The average compressive strength of 3 cores taken from test panels must equal or exceed 82 percent of the specified compressive strength.
 4. Testing During Construction: Shotcrete will be tested for compressive and flexural strength by one or more of the following methods:
 - a. Test Panels: Gunned by shotcrete nozzleman who will do production work. One test panel with minimum dimensions of 30 by 30 inches by 6 inches, gunned in the same position as work represented, complying with applicable provisions of ASTM C 1140. Make the test panels once each shift or once for each 50 cu. yds. of shotcrete placed through nozzle, whichever is more frequent. Moist cure panels unless otherwise directed by the Architect. A minimum of three 3-inch, nominal-diameter cores or three 3-inch cubes will be cut from each panel.
 - b. Samples from In-Place Shotcrete: Three 3-inch, nominal-diameter cores from the structure will be cut and tested in accordance with ASTM C 42. Do not cut into steel reinforcement. A set of cores will be tested once each shift or once for each 50 cubic yards gunite/shotcrete placed through nozzle whichever is more frequent.
 5. Strength Evaluation: Shotcrete will be considered acceptable as follows:
 - a. Mean compressive strength of any group of cores taken from the structure or test panel equals or exceeds specified compressive strength with no individual core less than 75 percent of specified compressive strength.
 - b. Mean compressive strength of any group of cores taken from the structure or test panel equals or exceeds 118 percent of the specified compressive strength with no individual cube less than 106 percent of the specified compressive strength.
 6. Installer's Qualifications: Prior to commencement of work, demonstrate that the proposed guniting personnel, materials and equipment are capable of batching, mixing, conveying and uniformly applying shotcrete in accordance with the specified requirements.
 - a. Use nozzle men having current certification in accordance with the guidelines of ACI 506.3R for the type of shotcrete required.
- J. Interior Finish: Ceramic Tile
1. The Pool Contractor shall furnish and install 1" x 1" and 2" x 2" ceramic tile work within the pool shell as indicated on the drawings. Color shall be selected by the Architect.
 2. Tile will be certified by the Tile Council of America (TCA) to be equal to or in excess of grade requirements of ANSI A-1237.1. Grouting and setting materials shall be as manufactured under TCA criteria.
 3. Tile shall be unglazed ceramic mosaic "Standard Grade" porcelain units, 1" x 1" and 2" x 2" cushion edge. Tile shall conform to ANSI A-1237.1 Section 6. Water absorption shall not exceed 0.5 percent. Not less than 25 percent of the floor tiles shall be non-slip type containing 7.5 percent abrasive grain by weight.
 4. Tile shall be installed in a "thick-set" bed of "dry-set" mortar in accordance with the specifications of the American National Standard Institute (ANSI) A-108.2.
 5. All setting and laying of tile shall be by experienced tile mechanics who can supply evidence that they have been steadily employed in the installation of pool tile work during the past three (3) years.

- K. Pool Steps: Pool steps, ladders and/or recessed stairwells shall be incorporated into the pool as shown on the drawings

2.2 POOL PIPING

A. WORK INCLUDED

1. Pipe, fittings, connections, wall penetrations, hangers and supports, equipment bases and supports, excavation and backfill.
2. The drawings indicate the general arrangement of the pool plumbing. Details of proposed departures due to actual field conditions or other causes shall be submitted to the Architect for approval. The Pool Contractor shall carefully examine the drawings and shall be responsible for the proper fitting, materials and equipment as indicated without substantial alteration.
3. The Pool Contractor shall supply and install all piping, pipe fittings and valves from the pool fittings to the juncture or the filter equipment; all piping, pipe fittings and valves from the pool main outlet line; chlorinator hoses where indicated; all piping and pipe fittings within the filter room required and as shown on the drawings; all pipe hangers, rods and supports and other material to complete the intended scope of work.
4. Any item of equipment or materials obviously a part of the filter and pool recirculation system and necessary to its operation but not specifically mentioned in the specifications or shown on the drawings shall be furnished and installed by this Pool Contractor as a part of his work at no extra cost.
5. All materials to be used in this work shall be installed by workmen thoroughly skilled in their trade and all work shall present a neat and mechanical appearance when complete. The architect shall be the sole judge of whether work installed under this contract has met this requirement and the Pool Contractor, at no additional expense to the Owner, shall replace or correct any work not judged acceptable by the Architect.

B. REFERENCES

1. ANSI/ASTM D2564 – Solvent cements for polyvinyl chloride (PVC) plastic pipe and fittings.
2. ANSI/ASTM D1785 – Standard specification for polyvinyl chloride (PVC) plastic pipe schedules 40, 80 and 120, NSF seal for potable water.
3. ASTM B88 – Seamless copper water tube.
4. ASTM D2855 – Practice for making solvent cemented joints with PVC pipe and fittings.
5. Eslon Engineering Manual for plastic piping systems.

C. PLACEMENT AND USE

1. All plastic pipe flanges shall be schedule 80 PVC with neoprene gaskets where required.
2. All pool gutter lines shall be schedule 80 solvent weld conforming to ASTM D1785/76. All gutter lines shall drain by gravity as shown on the drawings.
3. All buried filter return lines and main drain lines shall be PVC schedule 80, solvent weld.
4. All buried supply lines for miscellaneous equipment and features shall be PVC schedule 80, solvent weld.
5. All above grade piping inside the pool mechanical room shall be PVC schedule 80, solvent weld.
6. All chemical piping shall be schedule 80 PVC, solvent weld.
7. Pool heater connections shall be Type “L” copper piping, with wrought copper or cast brass fittings, 95/5 solder, on heater influent and effluent lines from the bypass to the heater.
8. All connections between PVC or CPVC and metal piping must be flanged, plastic flange to metal flange. DO NOT use threaded connections between plastic and metal piping.

D. HANGERS AND SUPPORTS

1. GENERAL

- a. All mechanical room piping must be properly supported using the schedule indicated on the drawings as a guideline for maximum allowable spacing between supports.
 - b. It shall be the contractor's responsibility to properly support piping at all valves, pumps, equipment, overhead areas, changes in direction, etc.
 - c. Use of the proper hanger for the conditions is essential. All piping must be supported laterally as well as vertically hung.
 - d. All hangers, pipe supports, threaded rod, hardware, etc. shall be zinc plated or galvanized steel.
 - e. All piping connections and support hardware shall be stainless steel inside surge tanks, balance tanks, and gutters.
 - f. Ring, clevis, roller and J hook type hangers are not acceptable.
2. STRUT
 - a. Minimum height 1-5/8", minimum width 1-5/8", minimum thickness 12-gauge material.
 - b. Finish shall be hot-dip galvanized steel, ASTM A123; or type 304 stainless steel or better grade, ASTM A240.
 3. STRUT CLAMPS
 - a. Pipe sized 1/2" thru 12", two-piece clamps with clamping bolt and nut. Pipe sizes 14" and larger, provide "U" bolts, nuts, and washers.
 - b. Finish shall be hot-dip galvanized steel, ASTM A123; or type 304 stainless steel or better grade, ASTM A240.
 4. STRUT ACCESSORIES
 - a. Flat plate fittings, corner braces, post bases, etc. Finish shall be hot-dip galvanized steel, ASTM A123; or type 304 stainless steel or better grade, ASTM A240.
 5. WEDGE ANCHORS
 - a. One-piece assembly, 3/8" minimum body diameter.
 - b. Grade 2, zinc plated with stainless steel clips; or type 304 stainless steel or better grade, ASTM A240.
 6. BEAM CLAMPS
 - a. Steel "C" clamp type with locknut.
 - b. Finish shall be electro-plated galvanized; or type 304 stainless steel or better grade, ASTM A240.
 7. SUPPORT COMPONENTS
 - a. All threaded rod, threaded rod couplings, nuts, washers, etc. Finish shall be electro-plated galvanized; or type 304 stainless steel or better grade, ASTM A240.
- E. POOL PIPE EXCAVATION AND BACKFILL
1. Excavation for all pool systems and related piping must comply with Division 1 and Division 2 of the specifications.
- F. SPECIAL BACKFILL AND BEDDING MATERIALS.
1. Existing subsoil materials shall not be used for pipe bedding.
 2. All piping shall be bedded with a minimum of 6" clear stone material and a minimum of 2'-0" clear stone material top cover. The balance may be existing site material, provided no organic material, clay or topsoil is used.
- G. PIPING
1. Piping must be laid on a grade so it will drain completely by gravity. In all instances where gravity drainage is not provided, the contractor shall install drain valves so that all lines can be drained completely. Shop drawings will be required on any such installation.
 2. Cut all pipe with mechanical cutter without damage to the pipe.
 3. Placing and laying: Inspect pipe for defects before installation. Clean the interior of the pipe thoroughly of foreign matter and keep clean during laying operation. Pipe shall not

be laid in water or when trench conditions are unstable. Water shall be kept out of the trench until the pipe is installed. When work is not in progress, open ends of the pipe and fittings shall be securely closed so that no trench water, earth, or other substance will enter the pipes or fittings.

4. Threaded joints: After cutting and before threading, the pipe shall be reamed and shall have burrs removed. Screw joints shall be made with graphite or inert filler and oil or with an approved graphite compound applied to male threads only. Threads shall be full-cut and not more than 3 threads on the pipe remained exposed. Use Teflon ii tape on the male threads of all threaded pipe joints. Caulking of threaded joints to stop or prevent leaks will not be permitted. Unions shall be provided where required for disconnection of exposed piping. Unions will be permitted only where access is provided.
5. Solvent welded joints shall be made in accordance with the manufacturer's printed instructions and the following minimum standards:
 - a. All fittings shall fit easily on the pipe before applying cement. The outer surface area of pipe and inner wall of fitting shall be dry and clean. Cleaner is to be applied to the outer surface of the pipe and to the inner surface of the fitting. Cement is to be applied to the outer surface of the pipe, or on the male section of fittings only. When the outside surface area of the pipe is satisfactorily covered with cement allow ten (10) seconds open time to lapse before inserting the pipe end into fittings. After full insertion of pipe into fitting, turn fitting about the pipe end approximately 1/8 to 1/4 of a turn. Wipe off excess cement at the joint in a neat cove bead. Follow manufacturer's instructions on solvents.
 - b. All joints shall remain completely undisturbed for a minimum of ten (10) minutes from the time of jointing the pipe and fitting. If necessary, to apply pressure to a newly made joint, limit to 10% of rated pipe pressure, during the first 24 hours after the joint has been made.
 - c. Full working pressure shall not be applied until the joints have set for a period of 24 hours.
 - d. Make provisions for expansion and contraction by way of swing joints or snaking.
 - e. Protect plastic pipe from exposure to aromatic hydro-carbons, halogenated hydro-carbons, and most of esters and keytones that attack the material. Protect all pipe from mechanical damage and long exposure to sunlight during storage.
 - f. PVC welding is not allowed without prior approval of the Architect/Engineer.
 - g. No installation shall be made that will provide a cross connection or inter-connection between distribution supply for drinking purposes and the swimming pool that will permit a backflow of water into the potable water supply. Pipe openings shall be closed with caps or plugs during installation. Equipment and pool fittings shall be tightly covered and protected against dirt, water and chemical or mechanical injury. At the completion of work the fittings, materials and equipment shall be thoroughly clean and adjusted for proper operation.

2.3 BUTTERFLY VALVES

- A. Butterfly valves 3" - 12" shall be wafer or lug bodies and shall be suitable for use between ANSI 125 and 150 lb. Flanges.
- B. Bodies of the flangeless design shall be provided with at least two bolt guides to center the valve in the pipeline.
- C. All valves shall be as manufactured by Bray Valve (713) 894-5454, Dominion or equal.
- D. All bolts and nuts shall be corrosion resistant zinc plated steel with plated washers to be used when secured to PVC flanges.

2.4 BALL VALVES

- A. PVC True Union Ball Valves, Ipex, Asahi, Spears or equal.

2.5 PIPE IDENTIFICATION

- A. Provide identification on all piping located above ground.
- B. Identify the contents and direction of flow.
- C. Mark at least once on each line and at 5-foot intervals minimum. Consult Health Department Code for minimum marking requirements.
- D. Color code per Health Department requirements. If code does not identify color coding requirement consult the Architect/Engineer.
- E. Brady, B-946, custom legend, self-sticking markers and arrows or equal.

2.6 CALCIUM HYPOCHLORITE TABLET CHLORINATION SYSTEM

A. General Description.

1. The system shall be designed to feed low concentrations of calcium hypochlorite in solution intermittently or continuously as required for pool and spa applications. The system shall be a single pre-assembled, package unit with a welded aluminum frame consisting of chlorinator, electrical box, centrifugal pump, and balance tank for ease of installation and operation. The system shall be the Power Base Model 1030 by Axiall Corporation. Only Accu-Tab® Blue SI calcium hypochlorite tablets by Axiall Corporation shall be used, with the patented solution modifier and the patented blue colorant added for safety (to help prevent accidental mixing with other chemicals).
2. The base proposal requires furnishing equipment as specified herein, though substitutions will be considered. The bidder is cautioned that substitutions must meet the quality and operational requirements of each feature specified in Section 1.02 below. Batch systems with pressure mixing components producing chlorine concentrations exceeding the limits of the specifications will not be considered.
3. Any system offered shall use an NSF Standard 50 listed erosion feeder and tablet combination and shall be capable of meeting all requirements of the Health Department having jurisdiction over the installation.

B. System Features.

1. A maximum chlorine solution level of 0.1% (1000 ppm) shall be maintained to prevent calcification in system components. Systems producing chlorine concentrations higher than 0.1% shall not be acceptable.
2. Delivery shall be by erosion feed technology to control accurate and consistent concentration limits in the chlorine treatment solution. Soaking type, spray and/or vortex technology systems shall not be acceptable.
3. The chlorinator shall automatically and continuously feed a limited quantity of chlorine in solution as needed; when the system is not running, no more chlorine than that amount which can be fed in one minute or less shall be left in the tank to prevent dilution. Batch systems preparing excess quantities of solution for delivery over an extended period shall not be acceptable.

4. centrifugal pump wired to the system electrical box shall feed freshly mixed chlorine treatment solution only as required for maximum efficiency. Batch systems requiring the use of a metering pump or pumps to feed pre-prepared standing solution shall not be acceptable.
5. All piping in the chlorinator unit shall be Schedule 40 PVC. Systems with flexible tubing shall not be acceptable.

C. System Components.

1. Tablet Chlorinator. Accu-Tab® chlorinators by Axiall Corporation are designed exclusively for Accu-Tab® Blue SI calcium hypochlorite tablets by Axiall Corporation. Tablets are placed on a sieve plate inside the chlorinator; as water flows across the sieve plate, the tablets erode at a rate proportional to the flow rate.
2. Inlet Water Supply Connection.
3. Model 1030 1" Socket (water supply of 10 GPM required)
4. Flow Meter. A rotameter (flow-through) flow meter, measuring the flow of the water-dissolving stream to the chlorinator.
5. Solution Tank. Made of PVC. Capacity: 7 gallons
6. Primary Solution Tank Level Control. Made from Schedule 80 PVC and 316L stainless steel, this 3/4" float valve meters the flow through the chlorination system. The float valve opens or closes to maintain the pump rate as it is manually throttled.
7. Solution Delivery Pump. Delivers chlorinated solution to the return line. A single-stage centrifugal pump is provided for systems with pressures up to 20 PSIG.
8. Solution Injection Pump Air Bleed. Used to prime the pump at start-up, or at any time, if necessary.
9. Overflow Protection. Two level switches in the upper portion of the solution tank will run the pump from high to lower level to prevent system overflow.
10. Primary Backflow Prevention. A PVC check valve prevents reverse flow of water into the system.
11. Discharge Flow Control Valve (manual). PVC gate valve allows operator to adjust flow of solution to the pool system.
12. Outlet Connection.
13. Model 1030 1" socket
14. Nema 4X Electrical Enclosure.
15. Aluminum Frame, Type 6061-T.

D. Optional Equipment.

1. Inlet pressure Regulator. Required if inlet pressure exceeds 15 psi.
2. Larger Pump. On systems requiring unit discharge pressures greater than 20 PSIG.
3. Inlet Booster Pump. A pump and electrical box mounted on a small aluminum frame for use when the inlet pressure is too low to feed the required amount of water.
4. Overflow Protection Alarm Light. A red light on the electrical box will illuminate when Over Flow Protection is initiated. The light remains illuminated until reset.

5. High-High Level Pump Switch (HHL Pump Switch). An additional level switch is installed that will run the pump for a field settable time to pump the level down in the solution tank. This will also provide low level protection for the pump.

E. Electrical Requirements.

1. Two electrical circuits are required for operation: (1) 110v 15- amp power, and (1) 110v control circuit from a pool controller.

F. Warranty.

1. The manufacturer shall guarantee in writing that this unit, if operated in accordance with written instructions given and accepted by the Owner, will perform in complete accord with the specifications. All components will be warranted against manufacturers' defects for twelve (12) months from its original installation date.

2.7 ACID-RITE 450 FEEDER

A. General Description.

1. The system shall be designed to erode Acid-Rite tablets, creating an acid solution, and feeding the solution intermittently or continuously as required for pool applications. The system shall be a single pre-assembled, package unit with a welded aluminum frame consisting of a feeder/balance tank combination, electrical box, and centrifugal pump for ease of installation and operation. The system shall be the Acid-Rite® 450 Feeder pH adjusting system by Axiall, a Westlake Company. Only Acid-Rite Tablets by Axiall shall be used with a red colorant added for safety (to help prevent accidental mixing with other chemicals).
2. The base proposal requires furnishing equipment as specified herein, though substitutions will be considered. The bidder is cautioned that substitutions must meet the quality and operational requirements of each feature specified in Section 1.02 below.
3. Any system offered shall use an NSF Standard 50 listed erosion feeder and tablet combination and shall be capable of meeting all requirements of the Health Department having jurisdiction over the installation.

B. System Features.

1. Delivery shall be by erosion feed technology for accurate control of acid addition. Soaking type, spray and/or vortex technology systems shall not be acceptable.
2. The acid feed system shall automatically and continuously feed a limited quantity of acid solution as needed. When the system is not running, no more acid solution than that amount which can be fed in 2 minutes or less shall be left in the tank to prevent dilution. Batch systems preparing excess quantities of solution for delivery over an extended period shall not be acceptable.
3. A centrifugal pump wired to the system electrical box shall feed freshly mixed acid solution only as required for maximum efficiency. Batch systems requiring the use of a metering pump or pumps to feed pre-prepared standing solution shall not be acceptable.
4. All piping in the acid feed system shall be Schedule 40 PVC. Systems with flexible tubing shall not be acceptable.

C. System Components.

1. Acid Feeder. Acid-Rite feeders by Axiall are designed exclusively for Acid-Rite tablets by Axiall. Tablets are placed on a plate inside the feeder; as water flows across the plate, the tablets erode at a rate proportional to the flow rate.
2. The lid color shall be red, matching the pail lid color to avoid mixing chemicals.
3. Inlet Filter. A filter is included to prevent debris from entering the float valve.
4. Inlet Water Supply Connection. 1" Socket (water supply of 10 GPM required)
5. Solution Tank. PVC, Integral with feeder. Capacity: 6 gallons
6. Primary Solution Tank Level Control. Made from Schedule 80 PVC and 316L stainless steel, this 3/4" float valve meters the flow through the feed system. The float valve opens or closes to maintain the pump rate as it is manually throttled.
7. Solution Delivery Pump. Delivers acid solution to the aquatic system return line. A single-stage centrifugal pump is provided for systems with pressures up to 20 PSIG.
8. Solution Injection Pump Air Bleed. Used to prime the pump at start-up, or at any time, if necessary.
9. Flow Meter. A flow meter, measuring the flow of the water-dissolving stream through the feed system.
10. Primary Backflow Prevention. A PVC check valve prevents reverse flow of water into the system.
11. Discharge Flow Control Valve (manual). PVC gate valve allows operator to adjust flow of solution to the pool system.
12. Overflow port. A 1" FPT port is located on the back side of the feeder solution tank. Can be plumbed to drain as desired.
13. Stacking Cartridge. A stacking cartridge is included that allows 1-7 stacks of tablets to permit control of lower delivery rates.
14. Outlet Connection. 1" Socket
15. Nema 4X Electrical Enclosure.
16. Aluminum Frame, Type 6061-T.

D. Optional Equipment.

1. None

E. Electrical Requirements.

1. Two electrical circuits are required for operation: (1) 110v 20 amp power, and (1) 110v control circuit from a pool controller.

F. Warranty.

1. The manufacturer shall guarantee in writing that this unit, if operated in accordance with written instructions given and accepted by the Owner, will perform in complete accord with the specifications. All components will be warranted against manufacturers' defects for twelve (12) months from its original installation date.

2.8 WATER CHEMISTRY CONTROLLER

- A. The controller shall continuously monitor water chemistry (ORP, PPM, and pH), Langelier Saturation Index, and temperature. It shall automatically control the chemical feed system,

heater, and main recirculation pump. The controller shall include a programmable microprocessor with an eight-line display screen and a 16-key keyboard for operator access. The controller specified is a Paddock PC 2100 system as supplied by Paddock Pool Equipment Company.

- B. Display features shall include: eight-line, twenty-two-character LCD display; full page menus; numeric keypad; English, French, and Spanish language options; U.S. and metric unit options. The controller shall be contained in one NEMA Type 3 lockable fiberglass cabinet. Multiple cabinets shall not be permitted.
- C. Control features include: ORP control; shock program; chemical saver program; pH control; PPM control; temperature control; energy saver program; saturation index; influent/effluent pressures; electronic flowmeter; recirculation pump; water level control; instrumented bypass line; probe rinse program; dynamic analysis probe failure alarm.
- D. Data and Communications features shall include in-board data logging; RS-232 connector; local data download; data/voice modem; remote operation; graphic data display.

2.9 ULTRAVIOLET DECHLORINATION AND DISINFECTION SYSTEM:

- A. It is the intent of these specifications that the swimming pool water be routinely monitored and treated by UV sterilization in the range of 220nm to 400nm to kill bacteria, viruses, molds and their spores and to continuously remove chloramines. The concentration of free chlorine residual shall at all times meet the requirements of the Health Department authority having jurisdiction over the swimming pool.
- B. The bidder is cautioned that any substitution must meet the quality and operational requirements of these specifications. Any proposed UV system must have a UL listing on the complete system and be listed under NSF Standard 50. Any substitute system shall have Health Department approval for this project prior to being offered.
- C. Equipment General Description: The UV System shall be a complete unit with all necessary controls. The control panel and UV chamber shall be capable of being installed up to 200 feet apart. The system shall be preassembled, and controls packaged for ease of installation at the job site and shall include:
 - 1. the UV chamber with flow and output safety control;
 - 2. a UV medium pressure arc tube modified to emit UV light from 220nm to 400nm;
 - 3. an automatic, adjustable, electric motor-driven quartz sleeve cleaning system;
 - 4. operational and power controls.
 - 5. the ability to dose control the UV delivered to the pool water.
- D. The system shall be sized for a swimming pool recirculation rate of 360 GPM and a turnover rate of 5.6 hours, model number UV Swim U 150-6D.
- E. UV Chamber: The UV chamber shall be pressure rated for continuous operation at 150psi tested to 225psi and constructed of type 316L stainless steel. It shall be designed for an internal pressure drop not to exceed 2psi at maximum flow. The chamber shall incorporate:
 - 1. temperature sensor to shut off the UV arc tube when there is inadequate flow in the chamber;
 - 2. UV intensity monitor which alarms when the UV arc tube output drops below the dosing level required for proper operation. The monitor shall be of the wet probe type wavelength specific

- to 240nm - 280nm with a 4-20mA output. It shall display actual lamp intensity (mW/cm²) on the control cabinet door display. (NOTE: Relative type UV monitors shall not be acceptable.) Dry probe monitors shall not be acceptable, as this type cannot be wiped during the automatic wiping action. Direct line of site monitors (ie those types that have the sensor directly exposed to UV light) shall not be permitted. The monitor shall use offset filters to extend monitor life and to ensure only a limited band of wavelengths is measured.
3. stainless-steel terminal cover fastened to the chamber end plate, to which is affixed the electrical conduit, to protect the lamps and electrical leads. NOTE: plastic terminal covers/caps shall not be permitted.)
 4. design for laminar flow to provide maximum efficiency in the transfer of UV to the water. (NOTE: baffle plates or similar devices create turbulent flow and dead spots which reduce the efficiency of UV transfer into the water and are therefore not permitted.)
 5. Limit switches shall be located to position the wiper, and to prevent the wiper parking over the active arc tube. The switches shall be magnetic type and shall include visual indication of the wiper position. The wiper mechanism shall be fail-safe, and shall shut the system down in the event of failure, as described below.
 6. The chamber shall contain a quartz sleeve, which is sealed at both ends by a UV shrouded O ring. The quartz must be annealed for durability and against breakage. Systems that contain a quartz thimble shall not be permitted. The thimble is inherently buoyant and poses a safety risk to operators during annual maintenance.
 7. The wetter surfaces shall be chemically passivated and all welds ground to eliminate any potential corrosion mechanisms. Crevices (as found behind a quartz thimble) shall not be permitted under any circumstance.
 8. Automatic Wiper System: For periodic cleaning of the quartz sleeves and the UV monitor probe, the chamber shall be fitted with an automatic cleaning mechanism.
 9. It shall consist of a single SS yoke with Teflon bosses and replaceable molded viton wiper rings which travel the full length of the quartz sleeve twice per cleaning cycle.
 10. The frequency of the wiper cycle shall be adjustable from 15 to 720 minutes and set for job conditions.
 11. The mechanism shall be driven by a two-pole bi-directional electric motor and acme lead screw.
 12. Reed type limit switches shall control the length of travel.
 13. The wiper mechanism wiper rings in the "parked" position shall not be over the lamp, blocking the transfer of UV light, or creating a "hot" spot on the arc tube.
 14. Ultra Violet Lamp: The UV lamp shall be a high intensity, medium-pressure UV arc tube modified to emit a continuous UV spectrum from 220nm to 400nm into the water.
 15. Full output must be available from 0 to 200 degrees.
 16. The lamp shall be UL approved with one electrical lead at each end.
 17. Lamps with metal frames shall not be permitted.
 18. Each lamp shall be individually numbered, and the manufacturing process shall permit full audit and traceability of assembly. In addition to an individual serial number, the part number shall be displayed on the lamp.
- F. UV System Control: The system control cabinet shall be epoxy coated steel, NEMA 12, fan cooled with louvers and replaceable filters.
1. The control system shall be de-energized when the cabinet door(s) are open.

2. All wiring shall be harnessed in DIN channels. The power supply to the UV arc tubes shall be from a constant wattage transformer.
3. The entire system shall be UL listed and there shall be a decal clearly showing this listing displayed in the cabinet.
4. The control cabinet shall display via a back lit liquid-plasma display the following information:
 - a. Power on
 - b. UV intensity (% and mW/cm²)
 - c. UV dose (mJ/cm²)
 - d. Flow rate in GPM
 - e. Arc tube ready indicator
 - f. Any alarm condition
 - g. Wiper status and alarm
5. Consumable spare parts list with part numbers
6. Local/remote operation switch, door mounted
7. Data logging of UV dose, lamp hours, lamp intensity for regulatory audit.
8. The control panel shall contain an Earth Leakage detector, which shall provide fail-safe protection for bathers and those working on the equipment within the pool environment.
9. The control panel shall be UL LISTED, and in addition shall conform to EN 50081 and EN 61000.
10. The panel and all UV components shall be manufactured to ISO 9001-2000.

2.10 MAINTENANCE EQUIPMENT:

- A. Vacuum Hose Service King 1-1/2" Hose X 75 Foot long, 1 required.
- B. Vacuum Head 22" Commercial Pro Vac, 1 required.
- C. SP 1682-2-3, 2" MIP X 1-1/2" Hose Adaptor, 1 required.
- D. Pump, Model 3180-E, Portable Pump and Motor. 12HP, 115 Volt, 1 Phase, 1 required.
- E. Pool Brush and Holder, Paddock Model 3330, 1 required.
- F. Leaf Skimmer, Paddock Model 3348, 1 required.
- G. Telescopic Handle, Paddock Model 3367, 1 required.

2.11 DECK EQUIPMENT

2.12 SAFETY EQUIPMENT

- A. RING BUOY
 1. The 24" Ring Buoy with white canvas cover designed and manufactured to U.S. Coast Guard requirements shall be supplied, Paddock Model 4726, 3 required.
- B. LIFE HOOK

1. The life hook with one-piece 16" aluminum handle shall be supplied, Paddock Model 4723, 3 required.

C. POLYETHYLENE ROPE

1. Sixty-two feet of 3/4" polyethylene rope, Paddock Model 4747 and 2 each Paddock Model 4774 3/4" rope hook terminals.

D. ROPE HOOK TERMINALS

1. Stainless Steel recessed cup anchor for lifeline, Paddock Model 9026, 6 required and Paddock Model 4778, 5" x 9" lifeline floats, 11 required.

2.13 RACING EQUIPMENT

A. RACING LANE MARKER LINES

1. Racing Lane Marker Lines shall consist of individual float segments measuring 4 1/4" in diameter by 1 15/16" wide, butted end to end on a 5/32" clear, vinyl, plastic covered aircraft type stainless steel cable to form a continuous line. Each float shall be injection molded of ultra violet stabilized polyethylene with 4 Turbo-Reactive Vanes integrally molded on each side of central diaphragm at a right angle to the center cable sleeve; and with a peripheral ring 3/4" wide joining the central diaphragm to the Turbo-Reactive Vanes. The Vanes shall be curved into the peripheral ring to catch and absorb the energy in the wave as it strikes the Vane. Each float segment itself shall be buoyant and shall rotate freely about the cable. Lines shall be assembled at the poll site to insure proper fit. Each Marker Line shall be composed of six float segments per foot (to provide flexibility for storage), clear vinyl covered aircraft type stainless steel cable, one stainless steel extension drawbar spring, one stainless steel tension toggle, two stainless steel cable clamps, two cable thimbles, and two stainless steel 5" hooks.

2.14 MISCELLANEOUS EQUIPMENT

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. All systems and subsystems shall be installed in accordance with that systems manufacturer's recommendations and instructions.
 1. In the event of a discrepancy between these specifications and the manufacturer's recommendations, price the most stringent approach for the purpose of bidding but call the issue to the attention of the construction manager in the form of a Request for Information and wait for an answer.
 2. Provide all accessories and supplemental equipment necessary to provide a complete working installation of all materials, equipment and systems specified or shown on drawings, as part of the base bid.
- B. Utilize manufacturer's certified installers or have the work inspected by a manufacturer's technical representative, as called for in sub-sections of this specification.
- C. Existing Conditions: Each contractor is responsible for verifying that existing conditions meet the requirements for the installation of their materials or systems.
 1. Start of work signifies that the Contractor accepts existing conditions, substrates and working conditions and will be fully responsible for warranting their own work as required herein.

2. Do not begin work if existing conditions can not provide durable base for an acceptable permanent installation. Inform construction manager immediately of any defects requiring correction, in writing, and wait for remedy or instructions on how to proceed, before beginning work.
- D. Ground all materials, equipment and systems as required by local codes and the most recent version of the National Electric Code.

3.2 SITE CLEARING:

- A. Prior to the start of pool construction, the site shall have been cleared by the General Contractor.

3.3 LAYOUT OF WORK:

- A. Before any excavation or construction shall be commenced the Contractor, under the supervision of the Architect/General Contractor, shall place batter boards permanently locating the perimeter of all structures. The site shall be excavated to an even grade by the General Contractor and templates installed demoting the exterior line of the pool shell.

3.4 DIMENSION AND DESIGNS:

- A. Structural designs shown on the pool drawings shall govern.
1. Concrete surfaces against which new gunite is to be placed shall be thoroughly cleaned and slushed with neat cement.
 2. All horizontal or vertical steel shall pass through construction joints in such a manner that the full strength of the reinforcing will be developed.
- B. Tolerances:
1. Depth - 0 to 1/4";
 2. Vertical; walls - +/- 1/8" in 10 feet.

3.5 EXCAVATION AND GRADING:

- A. The machine excavation and hand trim by the Contractor shall be carried on as one operation to aid in eliminating over excavation.
1. In order to obtain an even wall line, radius templates shall be used.
 2. The floor area shall be fine graded by placing screeds at intervals.
- B. Any minor voids which may occur due to over-excavation, or from boulders removed, shall be filled with flowable fill; the design of which shall be provided by the structural engineer.
1. Any major deformations in the excavation caused by the removal of large boulders, collapse of earth of inadequate bearing capacity or cave-ins, caused by subsurface water conditions, shall be reviewed with the structural engineer and shall be remedied utilizing recommendations from the structural engineer.
 - a. Stop work immediately; inform the construction manager of the conditions encountered and wait for instructions before proceeding.
- C. Before completion of the pool excavation, the beam at the top of the pool wall, which is a monolithic portion of the pool shell, shall be formed to the dimensions as shown on the drawings. A header shall be installed completely around the pool, the inside face of which shall be properly anchored in place. A taut cutting wire shall be anchored to ensure the dimensional

integrity of the gunite structure. Cutting wires shall be placed at all intersections of pool radius and vertical walls and on floor elevation pins to ensure dimensional accuracy of the structure.

- D. Pool pipe excavation and backfill: Special backfill and bedding materials.
 - 1. Existing subsoil materials shall not be used for pipe bedding.
 - 2. All piping shall be bedded with a minimum of 6" clear stone material and a minimum of 2'-0" clear stone material top cover. The balance may be existing site material, provided no organic material, clay or topsoil is used.

3.6 PIPING INSTALLATION

- A. Piping must be laid on a grade, so it will drain completely by gravity. In all instances where gravity drainage is not provided, the contractor shall install drain valves so that all lines can be drained completely. Shop drawings will be required on any such installation.
- B. Cut all pipe with mechanical cutter without damage to the pipe.
- C. Placing and laying: Inspect pipe for defects before installation. Clean the interior of the pipe thoroughly of foreign matter and keep clean during laying operation. Pipe shall not be laid in water or when trench conditions are unstable. Water shall be kept out of the trench until the pipe is installed. When work is not in progress, open ends of the pipe and fittings shall be securely closed so that no trench water, earth, or other substance will enter the pipes or fittings.
- D. Threaded joints: After cutting and before threading, the pipe shall be reamed and shall have burrs removed.
 - 1. Screw joints shall be made with graphite or inert filler and oil or with an approved graphite compound applied to male threads only.
 - 2. Threads shall be full-cut and not more than 3 threads on the pipe remained exposed.
 - 3. Use Teflon ii tape on the male threads of all threaded pipe joints. Caulking of threaded joints to stop or prevent leaks will not be permitted. Unions shall be provided where required for disconnection of exposed piping.
 - 4. Unions will be permitted only where access is provided.
- E. Solvent welded joints shall be made in accordance with the manufacturer's printed instructions and the following minimum standards:
 - 1. All fittings shall fit easily on the pipe before applying cement. The outer surface area of pipe and inner wall of fitting shall be dry and clean. Cleaner is to be applied to the outer surface of the pipe and to the inner surface of the fitting. Cement is to be applied to the outer surface of the pipe, or on the male section of fittings only. When the outside surface area of the pipe is satisfactorily covered with cement allow ten (10) seconds open time to lapse before inserting the pipe end into fittings. After full insertion of pipe into fitting, turn fitting about the pipe end approximately 1/8 to 1/4 of a turn. Wipe off excess cement at the joint in a neat cove bead. Follow manufacturer's instructions on solvents.
 - 2. All joints shall remain completely undisturbed for a minimum of ten (10) minutes from the time of jointing the pipe and fitting. If necessary to apply pressure to a newly made joint, limit to 10% of rated pipe pressure, during the first 24 hours after the joint has been made.
 - 3. Full working pressure shall not be applied until the joints have set for a period of 24 hours.
 - 4. Make provisions for expansion and contraction by way of swing joints or snaking.
 - 5. Protect plastic pipe from exposure to aromatic hydro-carbons, halogenated hydro-carbons, and most of esters and ketones that attack the material. Protect all pipe from mechanical damage and long exposure to sunlight during storage.
 - 6. PVC welding is not allowed without prior approval of the Architect/Engineer.
- F. No installation shall be made that will provide a cross connection or inter-connection between distribution supply for drinking purposes and the swimming pool that will permit a backflow of

water into the potable water supply. Pipe openings shall be closed with caps or plugs during installation. Equipment and pool fittings shall be tightly covered and protected against dirt, water and chemical or mechanical injury. At the completion of work the fittings, materials and equipment shall be thoroughly clean and adjusted for proper operation.

3.7 PIPE IDENTIFICATION

- A. Provide identification on all piping located in the mechanical equipment, chlorine, acid rooms, heater courts, etc.
- B. Identify the contents and direction of flow.
- C. Mark at least once on each line and at 5-foot intervals minimum. Consult Health Department Code for minimum marking requirements.
- D. Color code per Health Department requirements. If code does not identify color coding requirement consult the Architect/Engineer.

3.8 EMBEDDED ACCESSORIES:

- A. The Contractor shall place, before commencing the gunite work, all special pool fittings and receptacles that are to be embedded in the gunite and shall be responsible for their positioning in accordance with the drawings.

3.9 SANITATION AND MAINTENANCE SYSTEM INSTALLATION

- A. A qualified factory trained representative of the manufacturer shall install this equipment, put it into operation and instruct the owner's representative in the operation and maintenance of all such equipment.

3.10 GUNITE INSTALLATION

- A. Gunite shall be mixed at one-part silica fume cement and prevent C to four parts gunite sand by volume mixed dry for a period of not less than one (1) minute after materials have been added.
- B. Hydration shall occur at the nozzle of the cement gun using just enough water so that no slump shall occur in the gunite.
- C. The cement gun shall be equipped with an air pressure gauge and the air pressure at the end of the gun shall not be less than forty-five (45) pounds nor more than seventy (70) pounds when the hose is two hundred (200) feet in length or less.
- D. Air pressure shall increase five (5) pounds for each additional fifty (50) feet of material hose used but not more than three hundred (300) feet of material hose shall be used unless previously approved in writing by the Architect.
- E. Water pressure at the nozzle shall be maintained at not less than fifteen (15) pounds greater than the air pressure at the gun.
- F. The structural gunite shall be applied against original undisturbed soil, thoroughly compacted earth or suitable forms that will not yield during applications of the gunite.

- G. Surfaces upon which the gunite is to be applied shall be shot at a right angle to the surface, starting at the bottom and continuing upward.
 - 1. It will be built up in layers of thicknesses that will not slump, allowing sufficient time between the placing of layers for initial set to take place.
 - 2. All loose fine aggregate or rebound shall be removed from the surface being gunited before placing succeeding layers and, whenever possible, the first layer shall entirely cover the reinforcing steel in order to secure it in its proper position.

3.11 POOL STEPS:

- A. Pool steps, ladders and/or recessed stairwells shall be incorporated into the pool as shown on the drawings.

3.12 INSTALLATION OF DECK EQUIPMENT

- A. Furnish and install equipment in accordance with the manufacturer's drawings and instructions.
- B. Job conditions:
 - 1. Confirm that all embedded items are compatible with the installation of their respective systems.
 - 2. Manufacturers shall review the construction documents and shall notify the architect 10 days prior to the bid date of conflicts or additions to the work of other subcontractors for the proper installation of their system.

END OF SECTION 13 11 00

SECTION 13 12 13
PERFORMANCE FOUNTAIN

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the design and complete installation of water feature complete as shown on Drawings and as specified. Supply all labor, material, tools and equipment necessary to furnish and install the water feature which includes all related plumbing and electrical work. Such Work shall include but is not necessarily limited to the following:
 - 1. Testing at site
 - 2. System design layout
 - 3. Provide layout drawings and description of operation
 - 4. Construction details
 - 5. Excavation and backfill of trenches and pits
 - 6. Wiring and Piping to/from the water feature
 - 7. Wiring and piping connection to source
 - 8. Proper backflow protection devices and filters according to local codes, ordinances
 - 9. As built drawings
 - 10. Testing, adjustment and guarantee
 - 11. Shop drawings

- B. This Section requires the Contractor to supply material certification and related as data required or specified herein material, installations, including related plumbing, sewer, electrical, etc.

- C. The materials method of manufacture and installation procedures as itemized in this section are intended as a guide specification to obtain acceptable standards.

- D. The work is to be provided by performance requirement only. The water feature shall be as shown on the Shop Drawings and Plans.

- E. Related Sections include:
 - 1. Concrete for Exterior Improvements – 32 05 23
 - 2. Stonework – 04 40 00

1.2 DEFINITIONS

- A. Water feature includes concrete, decorative rock work, waterproofing, water pump and filters, sensors and controllers, valves, nozzles, drains, piping, valve and junction boxes, electrical power and other incidental work.

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide capable of withstanding the effects of gravity loads under conditions indicated.
- B. Operational Performance:
 - 1. Design fountain with appropriate overflow drains that prevent water from flowing over wall adjacent areas.
 - 2. Provide waterproofing that prevents the passage of water to surrounding areas.
 - 3. Design systems and select components to achieve indicated effects with reliable operation and minimal maintenance.
 - 4. Design for satisfactory operation in ambient temperatures from 35 deg F to 110 deg F.\

1.4 SUBMITTALS

- A. Product Data: For each type of product required. Where applicable, include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Include wiring diagrams, power requirements, rated capacities, furnished specialties, and accessories.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other Work.
 - 1. Include piping layout for plumbing work indicating location of valves, pumps and piping.
 - 2. Include wiring diagrams indicating connections to electrical service and type of service required for electrical components including pumps, sensors and controllers.
- C. Samples for Initial Selection: For each type of finish material required.
- D. Samples for Verification: For each type of finish material required.
- E. Maintenance Data: For operating components of water feature to include in maintenance manuals.
- F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An installer of decorative fountains and a minimum of 5 years of experience executing work of similar scope.
 - 1. Installer's responsibilities include design, fabricating, and installing water feature and providing professional engineering services needed to assume engineering responsibility.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Product Options: Information on the Contract Drawings and in Specifications establishes requirements for system's aesthetic effects and performance characteristics. Aesthetic effects are

indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction. Performance characteristics are indicated by criteria subject to verification by one or more methods including field testing, and in-service performance.

1. Do not modify intended aesthetic effects without approval from the Landscape Architect. If modifications are proposed, submit comprehensive explanatory data to the Landscape Architect for review.

D. Pre-installation Conference: Conduct conference at Project site for the following:

1. Review the location of the water feature.
2. Review required coordination with other Work.
3. Review locations and sizes for required utilities including service requirements.

1.6 PROJECT CONDITIONS

A. Field Measurements:

1. Indicate measurements on Shop Drawings.
2. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating without field measurements. Coordinate construction to ensure that actual dimensions correspond to established dimensions.

1.7 WARRANTY

A. Special Warranty: Installer's standard form in which Installer agrees to repair or replace water feature components that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Structural failures including cracking in concrete and decorative stone.
 - b. Leaking of water through fountain structure, piping, or waterproof membranes.
 - c. Faulty operation of pumps, filters or electrical wiring.
2. Warranty Period: 3 years from date of Substantial Completion.

B. Special Warranty for Operating Components: Manufacturer's standard form in which manufacturer agrees to repair or replace components that fail in materials or workmanship within specified warranty period.

1. Components:
 - a. Pumps
 - b. Filters
 - c. Electrical wiring

2. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

1. PRODUCTS

- A. Basis of Design: Design intent of fountains, pools, and water features is based on products by The Fountain People, Inc. Subject to compliance with requirements, provide products by named manufacturer or comparable products approved by the Landscape Architect.

2. PIPES, TUBES, AND FITTINGS

- A. PVC Pipe: ASTM D 1785, PVC 1120 compound, Schedule 40.
- B. PVC Socket Fittings, Schedule 40: ASTM D 2466.
- C. PVC, Pressure-Rated Pipe: ASTM D 2241, PVC 1120 compound, SDR 26.
- D. PVC Socket Fittings, Schedule 80: ASTM D 2467.
- E. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.

3. STONE

- A. Provide natural stone and rock, as shown on the contract drawings, approximating sizes indicated for selection by the Landscape Architect.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Set stakes to identify location of proposed water feature. Obtain Landscape Architect's approval before excavation.

3.2 INSTALLATION

- A. General: Install water feature in location indicated in accordance with approved Shop Drawings. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated.
- B. Utility Connections: Make water, electrical, and storm sewer connections from lines indicated on the Shop Drawings to equipment and fixtures required.
- C. In-Ground Vault and Box Installation: Install in approved locations and at approved elevations.
- D. Piping Installation:
 1. Location and Arrangement: Shop Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.
 2. Install piping free of sags and bends.
 3. Install fittings for changes in direction and branch connections.

4. Install unions adjacent to valves and to final connections to other components with NPS 2 or smaller pipe connection.
 5. Install flanges adjacent to valves and to final connections to other components with NPS 2-1/2 or larger pipe connection.
 6. Install underground thermoplastic piping according to ASTM D 2774.
 7. Lay piping on solid sub-base, uniformly sloped without humps or depressions.
 8. Install PVC piping in dry weather when temperature is above 40 deg F 5 deg C. Allow joints to cure at least 24 hours at temperatures above 40 deg F 5 deg C before testing unless otherwise recommended by manufacturer.
 9. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - b. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - c. PVC Non-pressure Piping: Join according to ASTM D 2855.
- E. Stone Installation: Install selected natural stone and rock in locations indicated and as approved by the Landscape Architect. Where required for proper operation or safety, securely attach stones with mechanical fasteners or mortar/grout.
- F. Equipment Installation:
1. Install equipment level and plumb, unless otherwise indicated.
 2. Install equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference with other installations. Extend grease fittings to an accessible location.
 3. Install equipment to allow right of way to piping systems installed at required slope.

3.3 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain pumps, filters and programmable components.

END OF SECTION
311013

Permit / GMP Set
April 30, 2021

Broadview Senior Living at Purchase College
Independent Living, Assisted Living/Memory Care, & Commons
HCM Project No. 215042.00

SPECIFICATIONS GROUP

Facility Construction Subgroup

DIVISION 14 - CONVEYING EQUIPMENT

14 21 23.16 MACHINE ROOM-LESS ELECTRIC TRACTION PASSENGER ELEVATORS
14 91 82 TRASH CHUTES

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SECTION 14 21 23.16

MACHINE ROOM-LESS ELECTRIC TRACTION PASSENGER ELEVATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes machine-room-less electric traction elevators.
- B. Related Requirements:
 - 1. Section 01 50 00 "Temporary Facilities and Controls" for temporary use of elevators for construction purposes.
 - 2. Section 03 30 00 "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
 - 3. Section 04 20 00 "Unit Masonry" for setting sleeves, inserts, and anchoring devices in masonry and for grouting elevator entrance frames installed in masonry walls.
 - 4. Section 05 50 00 "Metal Fabrications" for the following:
 - a. Attachment plates and angle brackets for supporting guide-rail brackets.
 - b. Divider beams.
 - c. Hoist beams.
 - d. Structural-steel shapes for subsills.
 - e. Pit ladders.

1.3 DEFINITIONS

- A. Definitions in ASME A17.1/CSA B44 apply to work of this Section.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include capacities, sizes, performances, operations, safety features, finishes, and similar information.
 - 2. Include Product Data for car enclosures, hoistway entrances, and operation, control, and signal systems.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and large-scale details indicating service at each landing, coordination with building structure, relationships with other construction, and locations of equipment.

2. Include large-scale layout of car-control station and standby power operation control panel.
3. Indicate maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.

- C. Samples for Initial Selection: For each type of exposed finish involving color selection.
- D. Samples for Verification: For exposed car, hoistway door and frame, and signal equipment finishes; 3-inch-square Samples of sheet materials; and 4-inch lengths of running trim members.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer and Installer.
- B. Manufacturer Certificates: Signed by elevator manufacturer certifying that hoistway and pit layout and dimensions, as indicated on Drawings, and electrical service including standby power generator, as shown and specified, are adequate for elevator system being provided.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.
1. Submit manufacturer's or Installer's standard operation and maintenance manual, according to ASME A17.1/CSA B44 including diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.
- B. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.
1. The Elevator Contractor shall obtain and pay for necessary Municipal and State Inspections and permits as required by the elevator inspection authority and make such tests as are called for by the regulations or such authorities. These tests shall be made in the presence of such authorities or their authorized representatives.
- C. Protective Pads: Install protective pads in specified elevator cars upon turnover.
- D. Continuing Maintenance Proposal: Submit a continuing maintenance proposal from Installer to Owner, in the form of a standard one-year maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Elevator manufacturer shall be ISO 9002 certified.
- B. Installer Qualifications: Elevator manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging. Store materials, components, and equipment off of ground, under cover, and in a dry location.

1.9 COORDINATION

- A. Coordinate installation of inserts, sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, inserts, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
- B. Coordinate locations and dimensions of work specified in other Sections that relates to electric traction elevators including pit ladders; sumps and floor drains in pits; entrance subsills; electrical service; and electrical outlets, lights, and switches in hoistways and pits.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Otis Worldwide Corporation; Gen2 Elevators or a comparable product by one of the following:
 - 1. KONE Inc.
 - 2. Schindler Elevator Corp.
 - 3. TK Elevator USA.
- B. Source Limitations: Obtain elevators from single manufacturer.
 - 1. Major elevator components, including driving machines, controllers, signal fixtures, door operators, car frames, cars, and entrances, shall be manufactured by single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with ASME A17.1/CSA B44.
- B. Accessibility Requirements: Comply with requirements for accessible elevators in the United States Access Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.

2.3 ELEVATORS

- A. Elevator System, General: Manufacturer's standard elevator systems. Unless otherwise indicated, manufacturer's standard components shall be used, as included in standard elevator systems and as required for complete system.
- B. Elevator Description:
 - 1. Rated Loads:

- a. IL Buildings:
 - 1) East Elevator 1: 3500 lb.
 - 2) East Elevator 2: 4000 lb.
 - 3) West Elevator 1: 3500 lb.
 - 4) West Elevator 2: 4000 lb.
 - b. Assisted Living & Memory Care Building:
 - 1) Elevator 1: 3500 lb.
 - 2) Elevator 2: 4000 lb.
 - c. Commons Building:
 - 1) Elevator 1: 4000 lb.
 - 2) Elevator 2: 3500 lb.
2. Gurney Capability: At least one elevator in each building must be capable of fitting a standard size gurney. This requirement is superseded by any code requirements for that application.
 3. Rated Speed: 150 fpm.
 4. Operation System: Selective-collective automatic operation.
 5. Auxiliary Operations:
 - a. Standby power operation.
 - b. Automatic dispatching of loaded car.
 - c. Nuisance-call cancel.
 - d. Loaded-car bypass.
 - e. Automatic operation of lights and ventilation fans.
 6. Security Features: Card-reader operation.
 7. Car Enclosures:
 - a. Inside Height: Not less than 7'-9" to underside of ceiling unless otherwise indicated.
 - 1) 4000 lb elevators in the Independent Living and Assisted Living/Memory Care buildings shall have an inside height of not less than 9'-9" to underside of ceiling.
 - b. Front Walls (Return Panels): Satin stainless steel, ASTM A480/480M, No. 4 finish.
 - c. Car Fixtures: Satin stainless steel, ASTM A480/480M, No. 4 finish.
 - d. Side and Rear Wall Panels: Plastic laminate.
 - e. Reveals: Satin stainless steel, ASTM A480/480M, No. 4 finish.
 - f. Door Faces (Interior): Satin stainless steel, ASTM A480/480M, No. 4 finish.
 - g. Door Sills: Aluminum.
 - h. Ceiling: Satin stainless steel, ASTM A480/480M, No. 4 finish.
 - i. Handrails: Satin stainless steel, profile as indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
 - j. Floor prepared to receive finish indicated in Finish Schedule.
 8. Hoistway Entrances:
 - a. Widths: As indicated on Drawings.
 - b. Height: 84 inches unless otherwise indicated on Drawings.

- c. Type: Single-speed side sliding unless otherwise indicated on Drawings.
- d. Frames: Satin stainless steel, ASTM A480/480M, No. 4 finish.
- e. Doors: Satin stainless steel, ASTM A480/480M, No. 4 finish.
- f. Sills: Aluminum.

9. Hall Fixtures: Satin stainless steel, ASTM A480/480M, No. 4 finish.

10. Additional Requirements:

- a. Provide inspection certificate in each car, mounted under acrylic cover with frame made from satin stainless steel, ASTM A480/480M, No. 4 finish.
- b. Provide hooks for protective pads and two complete sets of full-height protective pads in each 4000 lb elevator car.

2.4 TRACTION SYSTEMS

- A. Elevator Machines: Permanent magnet, variable-voltage, variable-frequency, ac-type hoisting machines and solid-state power converters.
- B. Fluid for Hydraulic Buffers: Fire-resistant fluid.
- C. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.
- D. Machine Beams: Provide steel framing to support elevator hoisting machine and deflector sheaves from the building structure. Comply with Section 05 50 00 "Metal Fabrications" for materials and fabrication.
- E. Car Frame and Platform: Bolted- or welded-steel units.
- F. Guides: Roller guides or polymer-coated, nonlubricated sliding guides. Provide guides at top and bottom of car and counterweight frames.

2.5 OPERATION SYSTEMS

- A. Provide manufacturer's standard microprocessor operation systems as required to provide type of operation indicated.
- B. Auxiliary Operations:
 - 1. Single-Car Standby Power Operation: On activation of standby power, car is returned to a designated floor and parked with doors open. Car can be manually put in service on standby power, either for return operation or for regular operation, by switches in control panel located where indicated on Drawings. Manual operation causes automatic operation to cease.
 - 2. Automatic Dispatching of Loaded Car: When car load exceeds 80 percent of rated capacity, doors begin closing.
 - 3. Nuisance-Call Cancel: When car calls exceed a preset number while car load is less than a predetermined weight, all car calls are canceled. Preset number of calls and predetermined weight can be adjusted.
 - 4. Loaded-Car Bypass: When car load exceeds 80 percent of rated capacity, car responds only to car calls, not to hall calls.

5. Automatic Operation of Lights and Fan: When elevator is stopped and unoccupied with doors closed, lighting, ventilation fan, and cab displays are de-energized after five minutes and are re-energized before car doors open.

C. Security features shall not affect emergency firefighters' service.

1. Card-Reader Operation: System uses card readers at car-control stations to authorize calls. Security system determines which landings and at what times calls require authorization by card reader. Provide required conductors in traveling cable and panel in machine room for interconnecting card readers, other security access system equipment, and elevator controllers. Allow space for card reader in car.

2.6 DOOR REOPENING DEVICES

- A. Infrared Array: Provide door reopening device with uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more light beams shall cause doors to stop and reopen.
- B. Nudging Feature: After car doors are prevented from closing for predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.

2.7 CAR ENCLOSURES

- A. Provide enameled or powder-coated steel car enclosures to receive removable wall panels, with car roof, access doors, power door operators, and ventilation.
 1. Provide standard railings complying with ASME A17.1/CSA B44 on car tops where required by ASME A17.1/CSA B44.
- B. Materials and Finishes: Manufacturer's standards, but not less than the following:
 1. Subfloor: Exterior, underlayment grade plywood, not less than 5/8-inch nominal thickness.
 2. Plastic-Laminate Wall Panels: Plastic laminate adhesively applied to manufacturer's standard honeycomb core with plastic-laminate panel backing and manufacturer's standard protective edge trim. Panels shall have a flame-spread index of 25 or less, when tested according to ASTM E84. Plastic-laminate color, texture, and pattern as selected by Architect from plastic-laminate manufacturer's full range.
 3. Fabricate car with recesses and cutouts for signal equipment.
 4. Fabricate car door frame integrally with front wall of car.
 5. Stainless Steel Doors: Flush, hollow-metal construction; fabricated from stainless steel sheet or by laminating stainless steel sheet to exposed faces and edges of enameled or powder-coated steel doors using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
 6. Sight Guards: Provide sight guards on car doors.
 7. Sills: Extruded or machined metal, with grooved surface, 1/4 inch thick.
 8. Metal Ceiling: Flush panels with six drop-in LEDs, stainless steel.
 9. Light Fixture Efficiency: Not less than 35 lumens/W.
 10. Ventilation Fan Efficiency: Not less than 3.0 cfm/W.

2.8 HOISTWAY ENTRANCES

- A. Hoistway Entrance Assemblies: Manufacturer's standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Frame size and profile shall accommodate hoistway wall construction.
 - 1. Where gypsum board wall construction is indicated, frames shall be self-supporting with reinforced head sections.
- B. Fire-Rated Hoistway Entrance Assemblies: Door and frame assemblies shall comply with NFPA 80 and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing at as close-to-neutral pressure as possible according to NFPA 252 or UL 10B.
 - 1. Fire-Protection Rating: 1-1/2 hours.
- C. Materials and Fabrication: Manufacturer's standards, but not less than the following:
 - 1. Stainless Steel Frames: Formed from stainless steel sheet.
 - 2. Star of Life Symbol: Identify emergency elevators with star of life symbol, not less than 3 inches high, on both jambs of hoistway door frames.
 - 3. Stainless Steel Doors: Flush, hollow-metal construction; fabricated from stainless steel sheet or by laminating stainless steel sheet to exposed faces and edges of enameled or powder-coated steel doors using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
 - 4. Sight Guards: Provide sight guards on doors matching door edges.
 - 5. Sills: Extruded or machined metal, with grooved surface, 1/4 inch thick.
 - 6. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M.

2.9 SIGNAL EQUIPMENT

- A. Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Provide vandal-resistant buttons and lighted elements illuminated with LEDs.
- B. Car-Control Stations: Provide manufacturer's standard recessed or semirecessed car-control stations. Mount in return panel adjacent to car door unless otherwise indicated.
 - 1. Mark buttons and switches for required use or function. Use both tactile symbols and Braille.
 - 2. Provide "No Smoking" sign matching car-control station, either integral with car-control station or mounted adjacent to it, with text and graphics as required by authorities having jurisdiction.
- C. Emergency Communication System: Two-way voice communication system, with visible signal, which dials preprogrammed number of monitoring station and does not require handset use. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
- D. Firefighters' Two-Way Telephone Communication Service: Provide telephone jack in each car and required conductors in traveling cable for firefighters' two-way telephone communication service.

- E. Car Position Indicator: Provide illuminated, digital-type car position indicator, located above car door or above car-control station. Also, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served. Include travel direction arrows if not provided in car-control station.
- F. Hall Push-Button Stations: Provide one hall push-button station at each landing.
 - 1. Provide units with flat faceplate for mounting with body of unit recessed in wall.
 - 2. Equip units with buttons for calling elevator and for indicating desired direction of travel.
 - 3. Provide telephone jack in each unit for firefighters' two-way telephone communication service.
- G. Hall Lanterns: Units with illuminated arrows; but provide single arrow at terminal landings. Provide the following:
 - 1. Manufacturer's standard wall-mounted units, for mounting above entrance frames.
 - 2. Hall lanterns must indicate whether elevator is moving up or down.
- H. Hall Annunciator: With each hall lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.
 - 1. At manufacturer's option, audible signals may be placed on cars.
- I. Hall Position Indicators: Provide illuminated, digital-display-type position indicators, located above each hoistway entrance at ground floor. Provide units with flat faceplate and with body of unit recessed in wall.
 - 1. Integrate ground-floor hall lanterns with hall position indicators.
- J. Standby Power Elevator Selector Switches: Provide switches, as required by ASME A17.1/CSA B44, where indicated. Adjacent to switches, provide illuminated signal that indicates when normal power supply has failed.
- K. Emergency Pictorial Signs: Fabricate from materials matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire, elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station unless otherwise indicated.

2.10 FINISH MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, commercial steel, Type B, exposed, matte finish.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, commercial steel, Type B, pickled.
- C. Stainless Steel Sheet: ASTM A240/A240M, Type 304.
- D. Stainless Steel Bars: ASTM A276, Type 304.
- E. Stainless Steel Tubing: ASTM A554, Grade MT 304.
- F. Aluminum Extrusions: ASTM B221, Alloy 6063.

- G. Plastic Laminate: High-pressure type complying with NEMA LD 3, Type HGS for flat applications and Type BKV for panel backing.
 - 1. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - a. As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Examine hoistways, hoistway openings, and pits as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions.
- B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.
- D. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.
- E. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- F. Leveling Tolerance: 1/8 inch, up or down, regardless of load and travel direction.
- G. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.
- H. Locate hall signal equipment for elevators as follows unless otherwise indicated:
 - 1. Place hall lanterns either above or beside each hoistway entrance.
 - 2. Mount hall lanterns at a minimum of 72 inches above finished floor.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of elevator installation and before permitting elevator use (either temporary or permanent), perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies.
- B. Operating Test: Load one elevator of each type, capacity, speed, and travel distance to rated capacity and operate continuously for 30 minutes over full travel distance, stopping at each level and proceeding immediately to the next. Record temperature rise of elevator machine during 30-minute test period. Record failure to perform as required.
- C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times that tests are to be performed on elevators.

3.4 PROTECTION

- A. Temporary Use: Limit temporary use for construction purposes to one elevator. Comply with the following requirements for elevator used for construction purposes:
 - 1. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
 - 2. Provide strippable protective film on entrance and car doors and frames.
 - 3. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
 - 4. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
 - 5. Do not load elevators beyond their rated weight capacity.
 - 6. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleanup, and adjustment as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
 - 7. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate, adjust, and maintain elevators.
- B. Check operation of each elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of manufacturer's standard warranty period. Determine that operation systems and devices are functioning properly.

3.6 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include three months' full maintenance by skilled employees of elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.

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1. Perform maintenance during normal working hours.
 2. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of two hours or less.
 3. Include regular examinations and adjustments at no additional cost.
- B. Contractor shall make adjustments to hoistway entrance to account for settlement over a 12 month period.

END OF SECTION 14 21 23.16

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SECTION 14 91 82

TRASH CHUTES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Waste chutes.
- 2. Waste doors.

- B. Related Requirements:

- 1. Section 05 50 00 "Metal Fabrications" for metal supporting framework at floor penetrations.
- 2. Section 07 62 00 "Sheet Metal Flashing and Trim" for roof-vent flashing.
- 3. Section 07 72 00 "Roof Accessories" for prefabricated roof curbs.

1.3 DEFINITIONS

- A. Access Door: Door other than an intake or discharge door that penetrates the chase wall for service access to devices in the chase.
- B. Chase: The shaft that encloses a chute.
- C. Discharge Door: Door or hatch at the bottom of a chute, through which materials exit the chute.
- D. Intake Door: Door or hatch that penetrates the chase wall and chute, and through which materials are fed into the chute.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chutes.

- B. Shop Drawings:

1. Include plans, elevations, sections, and mounting and attachment details.
2. Include dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include each type and location of intake, discharge, and access door.
4. Include diagrams for power, signal and control wiring.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Plan(s) and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 1. Size and construction of chase enclosing each chute; locations for power, signal, and control wiring; and sprinkler-piping and water-service connections.
 2. Chute-discharge locations coordinated with compactor-intake or container locations.
- B. Product Certificates: For each type of chute.
- C. Field quality control reports.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For chutes to include in operation and maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer for both installation and maintenance of units required for this Project.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Chutes International.
 2. Midland Chutes.
 3. U.S. Chutes; U.S.C. Group.
 4. Valiant Products, Inc.
 5. Wilkinson Hi-Rise, LLC.
- B. Source Limitations: Obtain from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing and inspecting agency, for fire-protection ratings indicated.
 1. Test Pressure: Test at atmospheric (neutral) pressure according to NFPA 252 or UL 10B.

2. Intake Doors: Labeled, 1-1/2-hour fire-resistance rated.
 3. Access Doors: Labeled, 1-1/2-hour fire-resistance rated.
- B. Discharge-Door Assemblies: Labeled, 1-1/2-hour fire-resistance rated according to NFPA 252 or UL 10B requirements for fire-rated door assemblies.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Standard: Provide chutes complying with NFPA 82.

2.3 WASTE CHUTES

- A. Chute Metal: Aluminum-coated, cold-rolled, commercial steel sheet; ASTM A463/A463M, Type 1, with not less than T1-40 coating.
1. Thickness: 0.0625 inch.
- B. Chute Size: 24-inch diameter.

2.4 WASTE DOORS

- A. Intake-Door Assemblies: ASTM A240/A240M, Type 304, stainless steel self-closing units with positive latch and latch handle, with stainless steel trim; constructed as required for performance requirements indicated; and with frame suitable for the enclosing chase construction.
1. Door Type: Hopper; bottom-hinged, hand-operated, silent, self-closing, positive-latching.
 2. Size: Manufacturer's standard size for door type, chute type, and diameter indicated.
 3. Finish: Manufacturer's standard satin or ASTM A480/A480M No. 3 directional polish.
 4. Latchset: Lever-handle type that unlatches door that does not require pinching, twisting, or grasping to operate and requires no more than 5 pounds to operate.
 5. Electrical Interlocks: Interlock system that is energized by opening one intake door; remaining intake doors automatically lock when system is energized.
 6. Baffles: Rubber backdraft baffles at each intake.
- B. Discharge-Door Assemblies: Aluminum-coated steel; direct vertical-discharge type, inclined, and horizontally closing and latching; constructed as required for performance requirements indicated; and equipped with 165 deg F fusible links that cause doors to close in the event of fire.
- C. Detector System: Heat- and smoke-detecting interlock system with temperature-rise elements that locks chute doors when temperature in chute reaches a predetermined, adjustable temperature.
1. Locate smoke detector outside discharge door with solenoid to close discharge door.
- D. Access-Door Assemblies: Manufacturer's standard ASTM A240/A240M, Type 302/304, stainless steel doors with trim; constructed as required for performance requirements indicated; with frame suitable for the enclosing chase construction; in satin or ASTM A480/A480M No. 3 directional polish finish; equipped with cylinder locks that release latch with keys that are removable only when cylinder is locked.

1. Lock Cylinder: Cylinders standard with manufacturer.
 2. Keying: Key access-door cylinders alike.
 3. Keys: Three for each cylinder.
- E. Manual Control System: Control system with manual switches that lock chute doors during shutdown hours and service operations.

2.5 ACCESSORIES

- A. Chute Fire Sprinklers: NFPA 13; manufacturer's standard, recessed, automatic, NPS 1/2 sprinklers; ready for piping connections.
- B. Sanitizing Unit: NPS 3/4 disinfecting and sanitizing spray-head unit located in chute above highest intake door, including 1-gal. tank and adjustable proportioning valve with bypass for manual control of sanitizing and flushing operation, ready for hot-water piping connection, and with access door for spray-head and piping maintenance.
- C. Intake-Door Baffles: Rubber baffles, 1/8 inch thick.
- D. Sound Dampening: Manufacturer's standard sound-deadening coating on exterior of chute, sound and vibration isolator pads at supporting frame at each floor penetration, and sound-insulating wrap around exterior of chute and intake assemblies.

2.6 FABRICATION

- A. Factory-assemble chutes to greatest extent practicable with nonleaking, continuously welded or lock-seamed joints without bolts, rivets, or clips projecting into chute interior. Include intake-door assemblies, metal supporting framing at each floor, and chute expansion joints between each support point.
- B. Roof Vent: Fabricate vent unit as full-size extension of chute, open to the atmosphere. Extend vent to height above roofing surface as indicated on Drawings. Equip vent with full insect screening and metal explosion-release cap. Fabricate with roof-deck flange, counterflashing, and clamping ring of nonferrous metal compatible with chute metal.
- C. Chute Fire Sprinklers: Install internally within chute, recessed out of the chute area through which material travels, and according to NFPA 13. Locate fire sprinklers at or above the top intake door of chutes, within the chute at alternate floor levels in buildings more than two stories tall, and at the lowest service level.
- D. Equipment Access: Fabricate chutes with access for maintaining equipment located within the chute, such as flushing and sanitizing units, fire sprinklers, and plumbing and electrical connections.

PART 3 - EXECUTION

3.1 INSTALLATION OF WASTE CHUTES

- A. Install and test chutes before installing enclosing chase construction.
- B. Install chutes according to NFPA 82 and manufacturer's written instructions. Assemble components with tight, nonleaking joints. Anchor chutes securely to supporting structure to

withstand impacts and stresses. Install chute and components to maintain fire-resistive performance of chute and the enclosing chase construction.

- C. Install chutes plumb, without obstructions that might prevent materials from free falling within chutes.
- D. Anchor flanges of chute vents to roof curbs before installing roofing and flashing. Install chute-vent counterflashing after roofing and roof-penetration flashing are installed.

3.2 INSTALLATION OF WASTE DOORS

- A. Intake and Discharge Doors: Interface door units with throat sections of chutes for safe, snag-resistant, sanitary depositing of materials in chutes.
 - 1. Interconnect sanitizer control with door interlock system.
- B. Electrical Interlock System: Install according to applicable NECA 1 recommendations.

3.3 FIELD QUALITY CONTROL

- A. Test chute components after installation.
 - 1. Operate doors, locks, and interlock systems to demonstrate that hardware operates properly and smoothly and electrical wiring is connected correctly.
 - 2. Complete test operations before installing chase enclosures.
- B. Test heat- and smoke-sensing devices for proper operation.
- C. Plumbing Access Doors: After construction of chase enclosure, verify that access doors have been correctly located and properly installed for their purpose.

3.4 ADJUSTING

- A. Adjust doors for smooth and balanced movement.
- B. Operate sanitizing unit through one complete cycle of chute use and cleanup, and replenish chemicals or cleaning fluids in unit containers.

3.5 CLEANING

- A. After completing chase enclosure, clean exposed surfaces of chute system's components. Do not remove labels of testing and inspecting agencies.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain each chute and related equipment.
- B. Demonstrate replenishment of sanitizing-unit chemicals or cleaning fluids.

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