



TETRA TECH
ARCHITECTS & ENGINEERS

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VOLUME 1

LAKELAND CENTRAL SCHOOL DISTRICT

SHRUB OAK, NEW YORK

PROJECT NO. 276721-23001

RECONSTRUCTION TO
WALTER PANAS HIGH SCHOOL
LAKELAND HIGH SCHOOL
COPPER BEECH MIDDLE SCHOOL

OCTOBER 13, 2023

The engineer that has signed this document certifies that to the best of their knowledge, information and belief, the asbestos plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, Construction Standards of the Commissioner of Education, New York State Department of Labor Part 56 of Title 12, and the United States Environmental Protection Agency Hazard Emergency Response ACT Regulations. Robert S. Masone is accredited to the EPA and New York State under AHERA Regulations as an Asbestos Project Designer (Asbestos Handling Certificate Number 92-17140).

To the best of the Architect's knowledge, information and belief, the design of this project conforms to all applicable provisions of the New York State Uniform Fire Prevention and Building Code, the New York State Energy Conservation Construction Code, and the building standards of the New York State Education Department.

BID SET

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PLEASE NOTE

All sections of the following **SPECIFICATIONS** are sequentially numbered, beginning with Page 1 and concluding with the last numbered page bearing the marking "END OF SECTION -- -- --".

Sections may include additional attachments as noted in following list of Specification sections.

SPECIFICATIONS

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01 08 00	General Commissioning Requirements	01 29 00	Payment Procedures (with one attachment)
01 12 00	Multiple Contract Project Summary-Project Schedule	01 31 00	Project Management and Coordination (with two attachments)
01 21 00	Allowances (with one attachment)	01 32 00	Construction Progress Documentation (with one attachment)
01 23 00	Alternates		
01 25 00	Substitution Procedures (with one attachment)		

SECTION TITLE

01 33 00	Submittal Procedures (with five attachments)
01 35 26	Governmental Safety Requirements
01 40 00	Quality Requirements
01 40 01-A1	Statement of Special Instructions
01 42 00	References
01 50 00	Temporary Facilities and Controls
01 60 00	Product Requirements
01 73 00	Execution
01 77 00	Closeout Procedures
01 78 23	Operation and Maintenance Data
01 78 39	Project Record Documents
01 79 00	Demonstration and Training

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02 08 10A	Asbestos Abatement-Walter Panas HS
02 08 10C	Asbestos Abatement-Lakeland HS
02 08 10D	Asbestos Abatement-Copper Beech MS
02 41 19	Selective Demolition
02 84 00	PCB Caulk Removal

DIVISION 03 - CONCRETE

03 30 00	Cast-in-Place Concrete
03 33 00	Architectural Concrete
03 54 15	Moisture Control System

DIVISION 04 - MASONRY

04 01 20.19	Unit Masonry Restoration
04 20 00	Unit Masonry

DIVISION 05 - METALS

05 12 00	Structural Steel Framing
05 50 00	Metal Fabrications
05 52 13	Tube Railings (Stainless Steel)
05 58 13	Column Covers

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

06 10 00	Rough Carpentry
06 10 26	Roofing Rough Carpentry
06 40 23	Interior Architectural Woodwork

DIVISION 07 - THERMAL AND MOISTURE PROTECTION

07 21 00	Thermal Insulation
07 27 26	Fluid-Applied Membrane Air Barriers
07 52 16	SBS Modified Bituminous Membrane Roofing

SECTION TITLE

07 53 23	EPDM Roofing Trim
07 71 00	Roof Specialties
07 73 00	Roof Drains and Accessories
07 84 13	Penetration Firestopping
07 84 43	Joint Firestopping
07 92 00	Joint Sealants

DIVISION 08 - OPENINGS

08 11 13	Hollow Metal Doors and Frames
08 14 16	Flush Wood Doors
08 31 13	Access Doors and Frames
08 41 13	Aluminum-Framed Entrances and Storefronts
08 46 00	Fire-Rated Glazed Opening Assemblies
08 62 00	Skylights
08 71 00	Door Hardware
08 80 00	Glazing

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 51 13	Acoustical Panel Ceilings
09 65 13	Resilient Base and Accessories
09 65 19	Resilient Tile Flooring
09 66 23	Resinous Matrix Terrazzo Flooring
09 68 13	Tile Carpeting
09 72 00	Wall Coverings
09 84 33	Sound-Absorbing Wall Units
09 91 00	Painting
09 96 00	High Performance Coatings

DIVISION 10 - SPECIALTIES

10 11 00	Visual Display Surfaces
10 14 00	Signage (with attachment)
10 14 01	Signage Attachment
10 14 19	Dimensional Letter Signage
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DIVISION 12 - FURNISHINGS

12 24 13	Roller Window Shades
12 32 13	Manufactured Wood-Veneer-Faced Casework
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LIST OF DRAWING SHEETS

Volume 1 of 2**GENERAL**

G001	Title Sheet
G100	Symbols and Abbreviations

Walter Panas High School**CODE COMPLIANCE**

AG350	Code Compliance Review, Vintage Key Plan and First Floor Key Plan

HAZARDOUS MATERIALS

AH-001.00	Asbestos Abatement General Notes
AH-002.00	Asbestos Abatement Partial First Floor Plan
AH-003.00	Asbestos Abatement Roof Area Plan

ARCHITECTURAL

AA050	First Floor Key Plan
AA100	First Floor Demolition Plan - Area F
AA130	First Floor Plan - Area F
AA160	Partial First Floor Reflected Ceiling Plan - Area F
AA190	Roof Plan and Details
AA200	Exterior Elevations - Gym Penthouse
AA300	Library Sections and Interior Elevations
AA400	Partial First Floor Area F - Enlarged Library Plan and Interior Elevations
AA401	Stepped Seating Plans and Details
AA402	Circulation Desk Plans and Details
AA500	Miscellaneous and Plan Details
AA600	Door Schedule, Door, Window and Wall Types, and Details
AA601	Storefront Types and Details
AA900	Enlarged Plans, Elevations and Details
AA901	First Floor Plan- Area F- Finish Plans

STRUCTURAL

AS130	Partial Roof Framing Plan - Area F
AS500	Typical Details

MECHANICAL

AM108	Partial First Floor Plans and Roof Plans - Area F
AM500	Details, Schedule and Controls

ELECTRICAL

AE050	First Floor Key Plan
AE105	First Floor Demolition Plan - Area F
AE130	First Floor Lighting Plan - Area F
AE160	First Floor Power & Communications Plan - Area F

ELECTRICAL (cont'd)

AE161	Partial Roof Plans - Area F
AE205	Fire Floor Fire Alarm Plan - Area F
AE500	Details
AE501	Details
AE600	Schedules

PLUMBING

AP050	First Floor Key Plan
AP400	Partial Floor Plans, Schedules, and Details

Lakeland High School

CODE COMPLIANCE

CG350	Code Compliance Review and Vintage Key Plan
CG351	Code Compliance First and Second Floor Key Plan

HAZARDOUS MATERIALS

CH-001.00	Asbestos Abatement General Notes
CH-002.00	Asbestos Abatement First Floor Plan
CH-003.00	Asbestos Abatement Roof Plan and Details

ARCHITECTURAL

CA050	First Floor Key Plan
CA051	Roof Key Plan
CA100	Partial First Floor Demolition Plan - Area C
CA101	Partial First Floor Demolition Plan - Area D
CA130	Partial First Floor Plan - Area A and C
CA131	First Floor Plan - Area D

ARCHITECTURAL (cont'd)

CA160	Partial First Floor Reflected Ceiling Plan - Area A, C, D and Details
CA190	Roof Plan
CA191	Roof Details
CA200	Exterior Elevations, Auditorium
CA201	Exterior Elevations, Gymnasium
CA300	Library Sections
CA400	Partial First Floor Plan - Area C and Details
CA401	Partial First Floor Plan - Area D and Details
CA410	Ramp and Stair Enlarged Plans and Details
CA411	Circulation Desk, Stepped Seating and Details
CA600	Door Schedule, Door and Window Types, and Details
CA601	Storefront Types and Details
CA900	Finish Plans, Elevations and Details
CA901	First Floor Area D Finish Plans

STRUCTURAL

CS130	Partial First Floor and Roof Framing Plans - Area D
CS500	Typical Details

MECHANICAL

CM100	First Floor Plans - Area D

MECHANICAL (cont'd)

CM101	Roof Plans - Area D
CM500	Details, Schedules and Controls

ELECTRICAL

CE050	First Floor Key Plan
CE051	Second Floor Key Plan
CE103	First Floor Demolition Plan - Area D
CE130	First Floor Lighting Plan - Area D
CE160	First Floor Power & Communications Plan - Area D
CE203	First Floor Fire Alarm Plan - Area D
CE400	Auditorium Demolition Plans
CE401	Auditorium Stage Lighting/Rigging Plans
CE402	Auditorium Stage Lighting Risers
CE500	Details
CE501	Details
CE600	Schedules

PLUMBING

CP050	First Floor Key Plan
CP051	Roof Plan
CP400	Partial Floor Plans - Area D, Details, and Schedules

Volume 2 of 2

GENERAL

G002	Title Sheet
G100	Symbols and Abbreviations

Lakeland Copper Beech Middle School

CODE COMPLIANCE

DG300	Site Code Compliance Site and Key Plan
DG350	Code Compliance Review and Vintage Key Plan
DG351	Code Compliance First and Second Floor Key Plan

HAZARDOUS MATERIALS

DH-001.00	Asbestos Abatement General Notes
DH-002.00	Asbestos Abatement First Floor - Area F Plan
DH-003.00	Asbestos Abatement First Floor - Area E Plan
DH-004.00	Asbestos Abatement First Floor - Area D Plan
DH-005.00	Asbestos Abatement First Floor - Area B Plan

SURVEY / MAPPING

DV001	Existing Land Survey
DV002	Existing Land Survey

CIVIL

DC100	Site Demolition Plan
DC110	Site SESC Plan
DC120	Site Layout Plan

CIVIL (cont'd)

DC130	Site Grading Plan
DC140	Site Utility Plan
DC500	Site Details
DC501	Site Details
DC502	Site Details

ARCHITECTURAL

DA050	First and Second Floor Key Plans
DA100	First Floor Demolition Plan - Area B
DA101	First Floor Demolition Plan - Area D
DA102	First Floor Demolition Plan - Area E
DA103	First Floor Demolition Plan - Area F
DA130	First Floor Plan - Area B
DA131	First Floor Plan - Area D
DA132	First Floor Plan - Area E
DA133	First Floor Plan - Area F
DA160	Partial First Floor Reflected Ceiling Plan - Area B, D and F and Details
DA161	First Floor Reflected Ceiling Plan - Area E
DA400	Enlarged Plans
DA401	Enlarged Plans
DA402	Enlarged Plans and Interior Elevation
DA403	Enlarged Plans and Details
DA600	Door Schedule, Door, Window and Wall Types, and Details
DA601	Storefront Types and Details
DA900	Enlarged Plans
DA901	Enlarged Plan
DA902	Elevations
DA930	Finish Plans
DA931	Finish Plans

STRUCTURAL

DS130	Partial Plans, Notes and Details

MECHANICAL

DM050	First Floor Key Plan
DM100	Partial First Floor Demolition Plan Area B and D
DM101	Partial First Floor Demolition Plans Areas E and F
DM130	Partial First Floor Plans - Areas B & D
DM131	Partial First Floor Plans - Areas E & F
DM136	Roof Plan
DM500	Mechanical Details
DM600	Schedules
DM700	Control Sequences and Diagrams

ELECTRICAL

DE050	First and Second Floor Key Plans
DE100	Partial Floor Plans - Area B
DE101	Partial Floor Plans - Area D
DE102	Partial Floor Plans - Area E
DE103	Partial Floor Plans - Area F

ELECTRICAL (cont'd)

DE160	Roof Power Plan
DE400	Enlarged Plans
DE500	Details
DE501	Details
DE502	Details
DE600	Schedules
DE601	Schedules
DE700	One-Line Diagram

PLUMBING

DP050	First Floor Key Plan and Details
DP400	Enlarged Science and Family and Consumer Science Demolition Plans
DP401	Enlarged Science and Family and Consumer Science Plans
DP402	Enlarged Library Plans, Details and Schedule

All drawings dated October 13, 2023.

NOTICE TO BIDDERS
LAKELAND CENTRAL SCHOOL DISTRICT

NOTICE IS HEREBY GIVEN, that sealed Bids, in duplicate, are sought and requested by the Board of Education, Lakeland Central School District (hereinafter called "Owner"), for the Reconstruction to Walter Panas High School, Lakeland High School and Lakeland Copper Beech Middle School - **Reference BID #13-25 276721-23001**.

Separate Bids are requested for the following Contracts:

General Work – GC-1
General Work – GC-2
Plumbing Work – PC-1
Mechanical Work – MC -1
Electrical Work – EC-1

In accordance with the Drawings, Project Manual (including Conditions of the Contract and Specifications), and other Bidding and Contract Documents prepared by:

Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a
Tetra Tech Architects & Engineers
10 Brown Road
Ithaca, New York 14850

A pre-bid conference for potential Bidders and other interested parties will be held on **Wednesday, September 18, 2024 at 10:00 AM** at the Main Office of the Lakeland Copper Beech Middle School, 3401 Old Yorktown Road, Route 132, Yorktown Heights, New York 10598.

Sealed Bids will be received by the Owner until **2:00 PM on Wednesday, October 2, 2024** at Lakeland Central School District, Business Office, 1086 East Main Street, Shrub Oak, New York 10588 at which time and place Bids received will be publicly opened and read aloud.

For the convenience of potential Bidders and other interested parties, the Bidding Documents may be examined at the following locations:

Reed Construction Data, Document Processing Center, 30 Technology Parkway South, Suite 500,
Norcross, GA 30092-2912
Eastern Contractors Association, Inc., 6 Airline Drive, Colonie, NY 12205
McGraw Hill Construction/Dodge, c/o Dataflow, 71 Fuller Road, Albany NY 12205
Lakeland Central School District, 1086 East Main Street, Shrub Oak NY 10588
Tetra Tech Architects & Engineers, 10 Brown Road, Ithaca NY 14850

Complete digital sets of Bidding Documents, drawings and specifications, may be obtained online as a download at tetratechaeprojectplanroom.com 'public projects' for a non-refundable fee of \$49.00 (Forty-Nine Dollars).

Complete hard copy sets of Bidding Documents, drawings and specifications, may be obtained online at tetratechaeprojectplanroom.com 'projects'. Checks shall be made payable to **Lakeland Central School District** in the sum of \$100.00 (One Hundred Dollars) for each set of documents. A scanned copy of the deposit check can be emailed to projects@revplans.com. Once the scanned copy of the executed deposit check is received, Bidding Documents will be shipped. Mail checks to Lohrius Blueprint, 226 Newtown Road, Plainview, New York 11803. Plan deposit is refundable in accordance with the terms in the Instructions to Bidders. Any bidder requiring documents to be shipped shall make arrangements with the printer and pay for all packaging and shipping costs (either by providing FedEx/UPS account number or being charged a flat rate by the printer).

Please note REV tetratechaeprojectplanroom.com is the designated location and means for distributing and obtaining all bid package information, electronic or hard copy. Only those Contract Documents obtained in this manner will enable a prospective bidder to be identified as a registered plan holder. The Provider takes no responsibility for the completeness of Contract Documents obtained from other sources. Contract Documents obtained from other sources may not be accurate or may not contain addenda that may have been issued.

All bid addenda will be transmitted to registered plan holders, regardless of receiving electronic or hard copy Bid Documents, via email and will be available at tetratechaeprojectplanroom.com. Registered plan holders who have paid for hard copies of the bid documents will need to make the determination if hard copies of the addenda are required for their use, and coordinate directly with REV for hard copies of addenda to be issued. There will be no charge for registered plan holders to obtain hard copies of the bid addenda.

As bid security, each Bid shall be accompanied by a certified check or Bid Bond made payable to the Owner, in accordance with the amounts and terms described in the Instructions to Bidders.

The Owner requires Bids comply with bidding requirements indicated in the Instructions to Bidders. The Owner may, at its discretion, waive informalities in Bids, but is not obligated to do so, nor does it represent that it will do so. The Owner also reserves the right to reject any and all Bids. The Owner will not waive informalities which would give one Bidder substantial advantage or benefit not enjoyed by all affected Bidders. Bids may not be withdrawn before 45 days following the Bid opening thereof, unless an error is claimed by the Bidder in accordance with the Instructions to Bidders.

INSTRUCTIONS TO BIDDERS

ARTICLE 1

PROJECT AND BIDDING INFORMATION

1. Project Identification: Reconstruction to Walter Panas High School, Lakeland High School and Lakeland Copper Beech Middle School.
 - a. Project Location: Lakeland Central School District
2. Owner: Lakeland Central School District
 - a. Address: 1086 East Main Street, Shrub Oak, New York 10588
3. Bid Opening: Bids will be received until the following Bid opening date and time, at the following location:
 - a. Bid Opening Date and Time: **Wednesday, October 2, 2024 at 2:00 PM**, local time.
 - b. Bid Opening Location: Lakeland Central School District, District Office, 1086 East Main Street, Shrub Oak, New York 10588.
4. Bidders are invited to submit Bids for any, or all of the following Contracts:
 - a. General Work – GC-1
 - b. General Work – GC-2
 - c. Plumbing Work – PC-1
 - d. Mechanical Work – MC-1
 - e. Electrical Work – EC-1
5. Access to the Project Site: Subject to Owner's prior approval of timing, Bidders will be permitted access to Project site on Monday through Friday, from 7:00 AM until 10:00 PM, except legal holidays.
 - a. Contact Owner's representative designated below, prior to visiting Project site, to arrange access.
 - b. Owner's Representative: Mr. George Prine, Director of Facilities, 3100 East Main Street, Mohegan Lake, New York 10547, Phone (914) 528-3701
6. Pre-Bid Conference: A pre-bid conference for potential Bidders and other interested parties will be held as follows:
 - a. Pre-Bid Conference Date and Time: **Wednesday, September 18, 2024 at 10:00 AM**, local time.
 - b. Pre-Bid Conference Location: Main Office of the Lakeland Copper Beech Middle School, 3401 Old Yorktown Road, Route 132, Yorktown Heights, New York 10598.
7. Agreement Form: The following will be used as the basis for the form of agreement between the Owner and the Contractor (Owner-Contractor Agreement):
 - a. Standard Form of Agreement Between Owner and Contractor, AIA Document **A132**.

ARTICLE 2
DEFINITIONS

1. Definitions in the General Conditions of the Contract for Construction, AIA Document **A232** or in other Contract Documents are applicable to the Bidding Documents.
 - a. “Addenda”: Written or graphic instruments issued by the Architect prior to execution of the Contract which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.
 - b. “Bid”: Complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.
 - 1) “Base Bid”: Sum stated in the Bid for which Bidder offers to perform the Work described in the Bidding Documents as the base, to which Work may be added or from which Work may be deleted for sums stated for Alternates.
 - 2) “Alternates”: Amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.
 - c. “Bidder”: Person or entity who submits a Bid.

ARTICLE 3
BIDDING PROCEDURES

1. Bid Form: Complete the Bid Form provided, in duplicate, with all blank spaces for Base Bid and Alternates legibly completed in ink, or typewritten, in both words and figures.
 - a. In the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.
 - b. Bid Forms without amounts expressed both in words and figures will not be accepted.
2. Bid Attachments: Complete and submit the following attachments with the Bid Form:
 - a. Attachment #1: Non-Collusive Bidding Certification.
 - b. Attachment #2: Certified Corporate Resolution.
 - c. Attachment #3: Iranian Energy Divestment Certification
 - d. Attachment #4: Certificate on Violations
3. Bid Security:
 - a. Submit, with the Bid Form, bid security in the amount of five percent of the Base Bid, in any of the following forms:
 - 1) Certified check, payable to the Owner; or
 - 2) Bid Bond, payable to the Owner, on Bid Bond, AIA Document A310, or standard bid bond form, duly executed by the Bidder as principal, with a surety company acceptable to the Owner.
 - a) Affix a certified and current copy of the power of attorney for the attorney-in-fact who executes the required bond on behalf of the surety.

- b. Within three days following the Bid opening, bid security will be returned to all Bidders, except the three apparent lowest Bidders.
 - 1) Within three days following execution of the Owner-Contractor Agreement, bid security will be returned to the three apparent lowest Bidders.
 - 2) If the Owner-Contractor Agreement has not been executed within 45 days following the Bid opening, bid security will be returned to the three apparent lowest Bidders, except as noted below.
 - c. Should the accepted Bidder, within 10 days following Notice of Award, fail or refuse to execute the Owner-Contractor Agreement and to provide the required performance and payment bonds, the accepted Bidder will be deemed to have abandoned the Contract and its bid security will be forfeited to the Owner.
4. Bid Submission: Submit each Bid, including attachments, in a sealed envelope bearing the Bidder's name and address, name of Contract, and name of Project. Deliver Bid to location specified no later than the Bid opening date and time indicated. Any Bid received after the Bid opening date and time indicated will be returned unopened.
5. Bid Withdrawal:
- a. Bid may be withdrawn by the Bidder up until the date and time specified for opening of Bids.
 - b. Following the Bid opening, Bid may not be withdrawn before 45 days following the Bid opening, except in the case of Bidder error, as follows:
 - 1) If the Bidder claims an error in the Bid, submit a written notice to the Architect, within three days of the Bid opening, describing in detail the nature of the error, submitting documentary evidence or proof of such error.
 - a) Failure to deliver such notice and evidence or proof, within the time frame required, constitutes a waiver of Bidder's right to claim error.
 - 2) Upon receipt of required notice and evidence or proof, the Owner, in consultation with the Architect, will determine if an excusable error has been made; and if so, the Owner may permit the Bid to be withdrawn. The Owner's determination will be conclusive upon the Bidder, its surety, and all who claim rights under the Bidder.

ARTICLE 4 BIDDING DOCUMENTS

1. Bidding Documents include the bidding requirements and the proposed Contract Documents, as follows:
- a. Bidding requirements consist of the following:
 - 1) Notice to Bidders.
 - 2) Instructions to Bidders.
 - 3) Bid Form, with attachments.
 - 4) Proposed Products Form.
 - 5) Proposed Subcontractors Form.

- 6) Proposed Schedule of Values Form.
 - 7) Bidder's Qualifications Form.
 - b. Proposed Contract Documents consist of the following:
 - 1) Owner-Contractor Agreement.
 - 2) Conditions of the Contract.
 - 3) Drawings.
 - 4) Specifications.
 - 5) Addenda.
2. Bidding Document Interpretations or Corrections:
- a. Submit requests for Bidding Document interpretation to the Architect, in writing using the provided Pre-Bid Request for Interpretation Form, at least five working days prior to the Bid opening.
 - b. Interpretations or corrections will be issued in the form of written Addenda. The Architect will not make oral interpretations or corrections.
 - c. Notification of addenda will be transmitted to registered plan holders via email and will be available to download at tetratetchaeprojectplanroom.com under "projects".
 - 1) Failure of any Bidder to not download addenda and/or failure to receive any such Addendum by reason of not having registered as a plan holder in accordance with the bidding instructions, shall not relieve the Bidder from any obligation required by the Addendum.
3. Equivalents and Substitutions: The use of manufacturer's brand names, catalog numbers, and similar proprietary identifying data is intended to establish a standard of quality, appearance, and function for those items. It is not the intention of the Owner or the Architect to eliminate from consideration products that are equivalent in quality, appearance, and function to those identified.
- a. Equivalents are pre-award and substitutions are post-award.
 - b. Equivalents:
 - 1) On Proposed Products Form provided, as post-Bid information, identify and list proposed equivalents to specified products as follows:
 - a) Applicable Specification Section and paragraph.
 - b) Proposed manufacturer's name, product brand name, and catalog number of proposed equivalent.
 - c) Note any aspect of the specified product that the proposed equivalent cannot meet.
 - 2) Failure to identify and list proposed equivalents shall be deemed to mean the Bidder will furnish the materials or products indicated in the Contract Documents without exception.
 - c. Substitutions: Refer to Division 01 Specification Section "Substitution Procedures".

4. Any required plan deposit shall be refunded to Bidders who submit a bona fide Bid and return the hard copy (paper) Bidding Documents in full, and in good condition within thirty days following the award of the contract or the rejection of the bids covered by such Bid Documents. If the Bid Documents are not returned in full, or in good condition, the cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded. Partial reimbursement, in an amount equal to the full amount of such deposit for one set of Bid Documents per non-bidder less the actual cost of reproduction of the Bid Documents as determined by the Architect, shall be made for the return of all other copies of the Bid Documents in good condition within thirty days following the award of the contract or the rejection of the bids covered by such Bid Documents. If the Bid Documents are not returned in full, or in good condition, the cost to replace missing or damaged paper documents will be deducted from the deposit.

ARTICLE 5 BIDDER'S REPRESENTATIONS

1. By submitting a Bid, Bidder represents that:
 - a. Bidder has visited and thoroughly inspected the Project site, and has become fully informed of the conditions relating to the Project;
 - b. Bidder has received, read, and is thoroughly familiar with the Bidding Documents, including all Addenda issued; and
 - c. Bidder has prepared its Bid based on the materials, equipment and systems required by the Bidding Documents or equivalents.

ARTICLE 6 BID CONSIDERATION

1. Opening of Bids: At the designated Bid opening date and time, Bids received will be publicly opened and read aloud.
2. Bid Rejection:
 - a. The Owner requires Bids comply with bidding requirements; however, the Owner may, at its discretion, waive informalities in Bids. The Owner is not obligated to do so and does not represent that it will do so. The Owner will not waive informalities which would give one Bidder substantial advantage or benefit not enjoyed by all affected Bidders.
 - b. The Owner reserves the right to reject any and all Bids not deemed in the best interests of the Owner, if in its judgment the public interest will be promoted thereby.
 - c. The Owner reserves the right to reject as "informal" any and all Bids which, in its opinion, are incomplete, conditional, obscure, or contain irregularities of any kind.
 - d. In rejecting a Bid, the Owner does not forfeit its right to accept the Bid for any other Contract contained in the Project; and the rejection of a Bid is not necessarily a finding by the Owner of any facts or circumstances which would preclude the Bidder from serving as a subcontractor on any portion of the Project.

3. Bid Acceptance: The Owner intends to award the Contract to the responsible Bidder whose Bid complies with conditions to render it formal, who is able to furnish approved surety bonds, and whose Bid is the lowest number of dollars as defined below.
 - a. Lowest Bid may be Base Bid plus any Alternates the Owner desires to accept.
 - b. If the acceptance of Alternates does not change the low Bidder, the Owner reserves the right to accept any or all Alternates within 45 days following Notice of Award.

ARTICLE 7
POST-BID INFORMATION

1. Contractor Qualifications: The Owner may make such investigations as it deems necessary to determine the ability of the Bidder to perform the Work.
 - a. The Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request, including the provided Bidder's Qualifications Form.
 - b. The Owner reserves the right to reject any Bid if the evidence submitted, or investigation of Bidder fails to satisfy the Owner that the Bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein.
2. Owner's Financial Capability: Successful Bidder may submit request to Owner for information regarding Owner's financial arrangements for this Project in accordance with the General Conditions, no later than 30 days following the Bid opening.
3. Post-Bid Submittals:
 - a. The three apparent low Bidders shall submit the following completed forms within three days following the Bid opening:
 - 1) Proposed Products Form.
 - 2) Proposed Subcontractors Form.
 - 3) Proposed Schedule of Values Form.
 - 4) Upon request, Bidder's Qualifications Form.

ARTICLE 8
PERFORMANCE BOND AND PAYMENT BOND

1. Bond Requirements:
 - a. The successful Bidder shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder.
 - b. Bonds shall be obtained from a surety satisfactory to the Owner, authorized and licensed to do business in the state where the Project is located, and listed in the latest issue of the U.S. Treasury Circular 570. The amount of each bond shall be equal to 100 percent of the Contract Sum. The sufficiency of the bonds is subject to the approval of the Owner and bonds deemed insufficient by the Owner may be rejected.
 - c. Affix a certified and current copy of the power of attorney for the attorney-in-fact who executes the required bonds on behalf of the surety.

2. Time of Delivery and Form of Bonds:

- a. Deliver required bonds to the Owner not later than the date the Agreement is entered into.
- b. Use Performance Bond and Payment Bond, AIA Document A312, unless otherwise approved by the Owner.

ARTICLE 9
MISCELLANEOUS PROVISIONS

1. All applicable laws, ordinances, rules, and regulations of Federal, State, and other authorities having jurisdiction over the Project shall apply to the Contract throughout, and will be deemed included in the Contract as though herein written out in full.
 - a. Sections of the New York State Labor Law (LL) and the New York State General Municipal Law (GML) include, but are not limited to, the following:
 - 1) LL §220, subd. 2: Eight-hour day, 40-hour week.
 - 2) LL §220, subd. 3 and LL §220-d: Minimum rate of wage and supplement.
 - 3) LL §220-e: Prohibiting discrimination.
 - 4) LL §222-a: Prevention of dust hazards.
 - 5) GML §103-d: Statement of non-collusion in bids.
 - 6) GML §106-b: Payment on public work contracts.
 - 7) GML §108: Workmen's compensation insurance.
 - 8) GML §109: Assignment of public contracts.
2. Time of Completion: Refer to Division 01 Section "Multiple Contract Summary – Project Schedule".

Attachment: Pre-Bid Request for Interpretation Form

END OF SECTION 00 21 13



INSTRUCTIONS TO BIDDERS
ATTACHMENT #1:
PRE-BID REQUEST FOR INTERPRETATION FORM

SUBMIT FORM BY EMAIL TO INE.Lakeland@tetrattech.com

Project No.: 276721-23001

Date:

Project Name: Reconstruction to Walter Panas High School, Lakeland High School and Lakeland Copper Beech Middle School

Bidder Contact Person:
Bidder Company Name:
Bidder Phone:
Bidder Email Address:

Question Pertains to:

Drawing Number:
Plan Area:
Room Number:
Drawing Detail Number:
Specification Section:

Question: (Please be specific)

Review by Architect/Engineers:

Responded By: _____ **Date:** _____

Submit requests not less than 5 working days prior to the specified Bid Opening date and time. In the event that this question requires clarification or modification of the Bidding Documents, such written information can only be provided by formal Addendum, distributed to all plan holders.



TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca, New York 14850
(607) 277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: GENERAL WORK CONTRACT (GC-1)

PROJECT TITLE: RECONSTRUCTION TO: WALTER PANAS HIGH SCHOOL, LAKELAND
HIGH SCHOOL AND LAKELAND COPPER BEECH MIDDLE SCHOOL

DATE: OCTOBER 13, 2023

PROJECT NO.: 276721-23001

BID TO: Board of Education
Lakeland Central School District
1086 East Main Street
Shrub Oak, New York, 10588

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

(words)

_____ (\$ _____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. LHS-01 - LAKELAND HIGH SCHOOL AUDITORIUM CARPETING AND AISLE LIGHTING REPLACEMENT

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) OR (figures)

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.

Attachment #2 - Certified Corporate Resolution.

Attachment #3 – Iranian Energy Divestment Certification

Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
(	)	
(	)	_____
(	)	Corporate Seal
(	)	
(	)	SIGNATURE (Corporate Officer)
(	)	
(	)	_____
(	)	
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

- (a) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- (b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;
- (c) No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

☐ True ☐ False

If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

Name Title

Sworn to before me this _____ day of _____, 20__.

Notary Public



TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca, New York 14850
(607) 277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: GENERAL WORK CONTRACT (GC-2)

PROJECT TITLE: RECONSTRUCTION TO: WALTER PANAS HIGH SCHOOL, LAKE LAND
HIGH SCHOOL AND LAKE LAND COPPER BEECH MIDDLE SCHOOL

DATE: OCTOBER 13, 2023

PROJECT NO.: 276721-23001

BID TO: Board of Education
Lakeland Central School District
1086 East Main Street
Shrub Oak, New York, 10588

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

(words)

(\$ _____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. CB-01 – LAKELAND-COPPER BEECH MIDDLE SCHOOL FAMILY AND CONSUMER SCIENCE ROOMS

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

ALTERNATE NO. CB-02 - SIDEWALK AT SOUTH SIDE OF LAKELAND-COPPER BEECH MIDDLE SCHOOL

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

ALTERNATE NO. CB-03 - SIDEWALK AT EAST SIDE OF LAKELAND-COPPER BEECH MIDDLE SCHOOL

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

ALTERNATE NO. CB-04 - ASPHALT PAVEMENT AND STORM PIPING AT EAST SIDE OF LAKELAND-COPPER BEECH MIDDLE SCHOOL

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

- Attachment #1 - Non-Collusive Bidding Certification.
- Attachment #2 - Certified Corporate Resolution.
- Attachment #3 – Iranian Energy Divestment Certification
- Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
(	)	
(	)	_____
(	)	Corporate Seal
(	)	
(	)	SIGNATURE (Corporate Officer)
(	)	
(	)	_____
(	)	
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

- (a) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- (b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;
- (c) No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

☐ True ☐ False

If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

Name Title

Sworn to before me this _____ day of _____, 20__.

Notary Public



TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca, New York 14850
(607) 277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: PLUMBING WORK CONTRACT (PC-1)

PROJECT TITLE: RECONSTRUCTION TO: WALTER PANAS HIGH SCHOOL, LAKE LAND
HIGH SCHOOL AND LAKE LAND COPPER BEECH MIDDLE SCHOOL

DATE: OCTOBER 13, 2023

PROJECT NO.: 276721-23001

BID TO: Board of Education
Lakeland Central School District
1086 East Main Street
Shrub Oak, New York, 10588

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

(words)

(\$ _____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. CB-01 - LAKELAND COPPER BEECH MIDDLE SCHOOL FAMILY AND CONSUMER SCIENCE ROOMS

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) OR (figures)

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.

Attachment #2 - Certified Corporate Resolution.

Attachment #3 – Iranian Energy Divestment Certification

Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
(	)	
(	)	_____
(	)	Corporate Seal
(	)	
(	)	SIGNATURE (Corporate Officer)
(	)	
(	)	_____
(	)	
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

- (a) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- (b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;
- (c) No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

☐ True ☐ False

If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

Name Title

Sworn to before me this _____ day of _____, 20__.

Notary Public



TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca, New York 14850
(607) 277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: MECHANICAL WORK CONTRACT (MC-1)

PROJECT TITLE: RECONSTRUCTION TO: WALTER PANAS HIGH SCHOOL, LAKE LAND
HIGH SCHOOL AND LAKE LAND COPPER BEECH MIDDLE SCHOOL

DATE: OCTOBER 13, 2023

PROJECT NO.: 276721-23001

BID TO: Board of Education
Lakeland Central School District
1086 East Main Street
Shrub Oak, New York, 10588

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

(words)

(\$ _____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. CB-01 - LAKELAND COPPER BEECH MIDDLE SCHOOL FAMILY AND CONSUMER SCIENCE ROOMS

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) OR (figures)

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

No. _____ Date _____

BID ATTACHMENTS

Enclosed with this Bid are the following attachments:

Attachment #1 - Non-Collusive Bidding Certification.

Attachment #2 - Certified Corporate Resolution.

Attachment #3 – Iranian Energy Divestment Certification

Attachment #4 – Certification on Violations

BID SECURITY

Enclosed with this Bid is bid security in the amount of five percent of the Base Bid.

EXECUTION OF CONTRACT

If written notice of the acceptance of this Bid is transmitted to the undersigned within 45 days following the Bid opening, the undersigned will, within 10 days following the Notice of Award, execute and transmit a Contract in the form as required by the Architect.

This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
(	)	
(	)	_____
(	)	Corporate Seal
(	)	
(	)	SIGNATURE (Corporate Officer)
(	)	
(	)	_____
(	)	
(	)	DATE: _____

BID FORM
ATTACHMENT #1

GENERAL CONDITIONS TO BID
NON-COLLUSIVE BIDDING CERTIFICATION

No bid will be accepted that does not have this form completely executed.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

- (a) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- (b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;
- (c) No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

BID FORM
ATTACHMENT #3

IRANIAN ENERGY DIVESTMENT CERTIFICATION

**Pursuant to Section 103-g
Of the New York State
General Municipal Law**

- A. By submission of this bid/proposal, each bidder/proposer and each person signing on behalf of any bidder/proposer certifies, and in the case of a joint bid, each party thereto certifies as to its own organization, under penalty of perjury, that to the best of its knowledge and belief that each bidder is not on the list created pursuant to paragraph (b) of subdivision 3 of Section 165-a of the New York State Finance Law.
- B. A Bid/Proposal shall not be considered for award, nor shall any award be made where the condition set forth in Paragraph A above has not been complied with; provided, however, that in any case the bidder/proposer cannot make the foregoing certification set forth in Paragraph A above, the bidder/proposer shall so state and shall furnish with the bid a signed statement which sets forth in detail the reasons therefore. Where Paragraph A above cannot be complied with, the Purchasing Unit to the political subdivision, public department, agency or official thereof to which the bid/proposal is made, or his designee, may award a bid/proposal, on a case by case business under the following circumstances:
1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

☐ True ☐ False

If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

Name Title

Sworn to before me this _____ day of _____, 20__.

Notary Public



TETRA TECH
ARCHITECTS & ENGINEERS

10 Brown Road
Ithaca, New York 14850
(607) 277-7100

Ithaca, New York
Farmingdale, New York
Albany, New York

BID FROM (Bidder's Name) : _____

(Address) : _____

Bidder's Telephone : _____

Bidder's Facsimile (Fax) : _____

Bidder's E-mail Address : _____
(if applicable)

BID FORM
(submit in duplicate)

CONTRACT: ELECTRICAL WORK CONTRACT (EC-1)

PROJECT TITLE: RECONSTRUCTION TO: WALTER PANAS HIGH SCHOOL, LAKE LAND
HIGH SCHOOL AND LAKE LAND COPPER BEECH MIDDLE SCHOOL

DATE: OCTOBER 13, 2023

PROJECT NO.: 276721-23001

BID TO: Board of Education

Lakeland Central School District
1086 East Main Street
Shrub Oak, New York, 10588

The Bidder hereby certifies that it has examined and fully understands the requirements and intent of the Bidding Documents, including the Bidding Requirements and proposed Contract Documents; and proposes to furnish all labor, materials, and equipment necessary to complete the Work on, or before, the dates specified in the Contract Documents for the **BASE BID** sum of:

(words)

(\$ _____)
(figures)

Show all amounts in both words and figures; in the event of a discrepancy between amounts written in words and figures, the amount written in words shall govern.

Refer to Division 01 Section "Allowances" for description of allowances to be included in the Base Bid above.

ALTERNATES

Indicate in the spaces provided below the amount to be added to or the amount to be deducted from (as applicable) the Base Bid if the Owner accepts the following Alternates described in Division 01 Section "Alternates".

Include in the amount of each Alternate, all labor, materials, overhead and profit, modification of Work specified in the Contract Documents, and additional work that may be required by acceptance of the Alternate.

ALTERNATE NO. LHS-01 - LAKELAND HIGH SCHOOL AUDITORIUM CARPETING AND AISLE LIGHTING REPLACEMENT

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

ALTERNATE NO. CB-01 – LAKELAND-COPPER BEECH MIDDLE SCHOOL FAMILY AND CONSUMER SCIENCE ROOMS

ADD to the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

OR

DEDUCT from the Base Bid the sum of:

_____ (\$ _____)
(words) (figures)

LIST OF ADDENDA RECEIVED

No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____
No. _____	Date _____	No. _____	Date _____

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This Bid may be withdrawn at any time prior to the Bid opening.

SIGNATURE

(	)	NAME OF BIDDER (Corporate Name)
(	)	
(	)	_____
(	)	Corporate Seal
(	)	
(	)	SIGNATURE (Corporate Officer)
(	)	
(	)	_____
(	)	
(	)	DATE: _____

BID FORM
ATTACHMENT #1

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No bid will be accepted that does not have this form completely executed.

By submission of this bid, each bidder and each person signing on behalf of any bidder certifies, and in the case of a joint bid each party thereto certifies as to its own organization, under penalty of perjury, that to the best of knowledge and belief:

- (a) The prices in this bid have been arrived at independently without collusion, consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other bidder or any competitor;
- (b) Unless otherwise required by law, the prices which have been quoted in this bid have not been knowingly disclosed by the bidder and will not knowingly be disclosed by the bidder prior to opening, directly or indirectly, to any other bidder or to any competitor;
- (c) No attempt has been made or will be made by the bidder to induce any other person, partnership, or corporation to submit or not to submit a bid for the purpose of restricting competition;
- (d) The person signing this bid or proposal certifies that he has fully informed himself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf;
- (e) That attached hereto (if corporate bidder) is a certified copy of resolution authorizing the execution of this certified by the signature of this bid or proposal in behalf of the corporate bidder.

(Individual)

(Corporation)

Dated: _____ By _____
(Signature of Officer)

This Non-Collusive Bidding Certificate must be submitted with the bid.

BID FORM
ATTACHMENT #2

CERTIFIED CORPORATE RESOLUTION

RESOLVED THAT _____ be authorized to sign and submit the bid or proposal of this corporation for the following project:

and to include in such bid or proposal the certificate as to non-collusion required by section one hundred three-d (103-d) of the general municipal law as to the act and deed of such corporation, and for any inaccuracies or mis-statements in such certificate this corporate bidder shall be liable under the penalties of perjury.

The foregoing is a true and correct copy of the resolution and adopted by

_____ at a meeting of its board of directors held on the
_____ day of _____ 20__ .

(Secretary)

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1. The investment activities in Iran were made before April 12, 2012, the investment activities in Iran have not been expanded or renewed after April 12, 2012, and the Bidder/Proposer has adopted, publicized and is implementing a formal plan to cease the investment activities in Iran and to refrain from engaging in any new investments in Iran; or
 2. The political subdivision makes a determination that the goods or services are necessary for the political subdivision to perform its functions and that, absent such an exemption, the political subdivision would be unable to obtain the goods or services for which the contract is offered. Such determination shall be made in writing and shall be a public document.

Signature

Title

Date

Company

BID FORM
ATTACHMENT #4

CERTIFICATION ON VIOLATIONS

_____, a representative of _____, hereby swears to and certifies that, to the best of his or her knowledge and belief:

1. Neither _____, nor any substantially owned-affiliated entity of the Bidder (collectively the "Bidder"), has been found to be in violation of the Davis-Bacon Act pursuant to 40 U.S.C. 3144, the Copeland Act pursuant to 18 U.S.C. 874 and 40 U.S.C. 3145 or the Contract Work Hours and Safety Standards Act pursuant to 40 U.S.C. 332, or their New York State counterparts.

☐ True ☐ False

If False is selected, information for questions 2 and 3 must be provided. If True is selected questions 2 and 3 are not applicable, continue to question 4.

2. If the Bidder has been found to be in violation of the Davis-Bacon Act, the Copeland Act, the Contract Work Hours and Safety Standards Act, or any of their New York State counterparts, state the name of the agency, the date of the violation, the nature of the violation and any consequence of the violation, including warnings, fines and debarments below.

3. The Bidder is not currently under investigation by any local, state or federal government agency. If Bidder is under investigation, state the name of the agency, the date of the alleged violation and the nature of the alleged violation below.

4. The Bidder's Dun & Bradstreet D-U-N-S number is _____.

5. I have authority to execute this certification, knowing it will be relied upon by the Owner of this Project.

Name Title

Sworn to before me this _____ day of _____, 20__.

Notary Public

NAME OF BIDDER _____

PROPOSED PRODUCTS FORM**SUBMITTED BY THREE LOW BIDDERS WITHIN THREE DAYS FOLLOWING BID OPENING**

In accordance with Articles 4 and 6 of the Instructions to Bidders, list specified products and corresponding proposed equivalent products below. Include additional pages as necessary.

Attach additional sheet explaining any aspect of the Contract Documents that cannot be complied with by the manufacturer or supplier of the proposed equivalent product.

Specified Product**Equivalent Product**

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

Technical Section: _____

Manufacturer: _____

Specified Product: _____

Product

Designation: _____

NAME OF BIDDER _____

PROPOSED SUBCONTRACTORS FORM**SUBMITTED BY THREE LOW BIDDERS**
WITHIN THREE DAYS FOLLOWING BID OPENING

Review of proposed subcontractors shall be in accordance with Article 5.2 of the General Conditions.

Instructions:

1. List below name of each subcontractor whose figures have been used in preparing the Bid, and to whom a subcontract is expected to be awarded, upon Architect's review, should the Contract be awarded to the Bidder.
2. For each subcontractor, identify the Specification section(s) included in that subcontract.

<u>Subcontractor Name</u>	<u>Specification Section</u>

NAME OF BIDDER _____

PROPOSED SCHEDULE OF VALUES FORMSUBMITTED BY THREE LOW BIDDERS WITHIN THREE DAYS FOLLOWING BID OPENING

For the convenience of the Owner's preliminary analysis of the Bid, list the value of the Work included in the Base Bid sum for each building:

Walter Panas High School \$ _____

Lakeland High School..... \$ _____

Lakeland-Copper Beech Middle School \$ _____

Total Base Bid..... \$ _____

NAME OF BIDDER _____

BIDDER'S QUALIFICATIONS FORM**NOTARIZED AND SUBMITTED BY THREE LOW BIDDERS**
WITHIN THREE DAYS FOLLOWING BID OPENING
UPON REQUEST BY ARCHITECT

All questions must be answered and the data given must be clear and comprehensive. If necessary, questions may be answered on separate attached sheet.

1. Name of Bidder:
2. Permanent main office address:
3. When organized:
4. If a corporation, where incorporated:
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand: (List these, showing amount of each contract and the appropriate anticipated dates of completion.)
7. General character of work performed by your company:
8. Have you ever failed to complete any work awarded to you?

If so, where and why?
9. Have you ever defaulted on a contract?

If so, where and why?
10. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
11. List your major equipment available for this Contract.
12. List your experience in work similar to this project.
13. List the background and experience of the principal members of your organization, including officers.
14. List the work to be performed by Subcontractors and summarize the dollar value of each Subcontract.
15. Credit available: \$
16. Give bank reference:

 AIA® Document A232® – 2019**General Conditions of the Contract for Construction, Construction Manager as Adviser
Edition****for the following PROJECT:***(Name, and location or address)*

Reconstruction to
Walter Panas High School
Lakeland High School
Lakeland Copper Beech Middle School
Tt Project No. 276721-23001

THE CONSTRUCTION MANAGER:*(Name, legal status, and address)*

Triton Construction, Inc.
1279 NY-300, 1st Floor
Newburgh, New York 12550

THE OWNER:*(Name, legal status, and address)*

Lakeland Central School District
1086 East Main Street
Shrub Oak, New York 10588

THE ARCHITECT:*(Name, legal status, and address)*

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
Cornell Business & Technology Park
10 Brown Road
Ithaca, New York 14850

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Documents A132™–2019, Standard Form of Agreement Between Owner and Contractor, Construction Manager as Adviser Edition; B132™–2019, Standard Form of Agreement Between Owner and Architect, Construction Manager as Adviser Edition; and C132™–2019, Standard Form of Agreement Between Owner and Construction Manager as Adviser.

TABLE OF ARTICLES

1	GENERAL PROVISIONS
2	OWNER
3	CONTRACTOR
4	ARCHITECT AND CONSTRUCTION MANAGER
5	SUBCONTRACTORS
6	CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
7	CHANGES IN THE WORK
8	TIME
9	PAYMENTS AND COMPLETION
10	PROTECTION OF PERSONS AND PROPERTY
11	INSURANCE AND BONDS
12	UNCOVERING AND CORRECTION OF WORK
13	MISCELLANEOUS PROVISIONS
14	TERMINATION OR SUSPENSION OF THE CONTRACT
15	CLAIMS AND DISPUTES

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. The Contract Documents include the Notice to Bidders, Instructions to Bidders, sample forms and the Contractor's bid.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification in a written instrument signed by Owner, or Architect in the case of a written order for a minor change in the Work. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. No obligation of the Construction Manager and/or Architect to the Owner, whether expressed by agreement or implied by law, shall be construed as intended for the benefit of the Contractor. Nothing in the Contract Documents nor in any aspect of the Construction Manager and/or Architect's relationship with the Owner shall create or give rise to any duty whatsoever on the part of the Construction Manager and/or Architect to the Contractor. The term "Contractor" in this paragraph shall include the Contractor, its officers, employees, agents, contractees and Subcontractors of any tier.

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project. The Work included is general and in no way limits or qualifies the Contract requirements.

§ 1.1.4 The Project. The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by other Contractors, and by the Owner's own forces and Separate Contractors.

§ 1.1.5 Contractors. Contractors are persons or entities who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

§ 1.1.6 Separate Contractors. Separate Contractors are persons or entities who perform construction under separate contracts with the Owner not administered by the Architect and Construction Manager.

§ 1.1.7 The Drawings. The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.8 The Specifications. The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

The Specifications may describe (or the Drawings may show) the general placement required of materials or equipment, but the actual required placement may vary depending on the specific material or equipment used by the Contractor or the existing field conditions. The Contractor shall bear all direct and indirect costs associated with such variations.

Some Specifications may be written in a condensed outline form and omitted words shall be included by inference. If the Specifications identify a task, it shall mean the "Contractor shall furnish, install and complete" the identified task unless otherwise stated.

Reference to standard specifications, manuals or codes shall mean reference to the latest standard specification, manual or code in effect at the time of the execution of the Owner-Contractor Agreement, unless otherwise stated. When reference is made to a manufacturer, trade association, reference standard or similar source (such as ASTM, ASA, AISC, ACI, etc.) the standards or requirements of such entity shall be incorporated into the Specifications and have the force and effect as though they were set forth expressly. Upon entering into the Owner-Contractor Agreement, the Contractor acknowledges its familiarity with those references, codes, etc. The date of the referenced standard shall be the latest edition in effect at the time of the execution of the Owner-Contractor Agreement unless otherwise stated.

§ 1.1.9 Instruments of Service. Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.10 Initial Decision Maker. The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.23 Minor Change in the Work. "Minor Change in the Work" refers to Architect ordered minor changes that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum of an extension of the Contract Time. The Architect's order for minor changes must be in writing.

§ 1.1.24 Nothing in the Contract Documents shall relieve Contractor from its requirement to comply with all applicable statutory requirements and other governmental or quasi-governmental codes, rules and regulations, including, without limitation, those contained in New York State Education Law §3813.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. Items not expressly included in the Contract Documents, but which are reasonably inferable therefrom as being necessary to produce the intended results shall be deemed included in the Work. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 Whenever any additional materials and/or workmanship not shown or specified are required to complete the Work of the Contract Documents in accordance with the intent thereof, the Contractor shall provide these materials and workmanship at no additional cost to the Owner.

§ 1.2.1.2 Execution of the Contract by the Contractor is a representation that the Contractor has carefully examined the Contract Documents (and the site, and represents that the Contractor is thoroughly familiar with the nature and location of the Work, the site and all improvements thereon, the specific conditions under which the Work is to be performed, and all matters which may in any way affect the Work or its performance. The Contractor further represents that as a result of such examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose, and is familiar with all applicable codes, ordinances, laws, regulations, and rules as they apply to the Work, and that the Contractor will abide by same. Claims for additional time or additional compensation as a result of the Contractor's failure to follow the foregoing procedure and to familiarize itself with all local conditions and the Contract Documents will not be permitted. The Contractor shall also review accessibility and general character of the site or building(s), the extent of existing work within or adjacent to the site, and any other work being performed thereon at the time of submission of his bid

§ 1.2.2 The Specifications may be generally divided into trade sections, and, if so, it is for the purpose of convenience and ready reference only. The Contractor will be permitted to allot the work of Subcontractors at his own discretion

regardless of the groupings in the Specifications. It shall be the Contractor's responsibility to settle definitely with each Subcontractor the portions of the Work which each will be required to perform and the Owner (including the Owner's Representative), Construction Manager and Architect assume no responsibility whatsoever for any jurisdiction claimed by any of the trades/Subcontractors involved in the Work. The Contractor shall, subject to the other terms of the Contract Documents, provide each item listed, of quality noted and subject to qualifications noted, and shall perform operations prescribed according to the conditions stated, furnishing therefore all necessary labor, materials, equipment and incidentals required to complete the Work. Contractor represents that the Subcontractors, manufacturers and suppliers engaged or to be engaged by it are and will be familiar with the requirements for performance by them of their obligations.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.3.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- .1 Modifications, as defined in Section 1.1.1.
- .2 The Agreement.
- .3 Addenda, with those of later date having precedence over those of earlier date.
- .4 The General Conditions of the Contract for Construction.
- .5 Division 01 of the Specifications.
- .6 Drawings and remaining Divisions of the Specifications.

In the case of conflicts or discrepancies between Drawings and Divisions of the Specifications (other than Division 01), or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13.

§ 1.2.4 The Contractor shall provide all labor, materials, equipment, appliances and services necessary to execute and complete all work as required by the Contract Documents and the applicable Building Codes. Contractors shall conduct pre-construction surveys and provide photo/videos of any existing damage in areas where new construction is to take place prior to the start of work. A copy of such documentation shall be provided to the Owner's representative.

§ 1.2.4.1 The Contractor and each Subcontractor shall evaluate and satisfy themselves with the conditions at the site and limitations under which the Work is to be performed including, without limitation, (1) the location, condition, layout and nature of the Project site and surrounding areas, (2) generally prevailing climatic conditions, (3) anticipated labor supply and costs, (4) availability and cost of materials, tools and equipment, (5) any time restrictions for accessing or working at the site, (6) the storage, handling and trucking of materials to be used on-site, and (7) all other matters as may be incidental to the work under the Contract, before and after delivery of the bid proposal.

§ 1.2.4.2 The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time in connection with any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph 1.2.

§ 1.2.4.3 Contractor represents and warrants that its investigation of the site was performed in detail and was sufficient to disclose the condition of the Project Site and all improvements thereon, and the conditions under which the Work is to be performed, including, without limitation (i) the location, condition, layout and nature of the Project Site and surrounding areas; (ii) anticipated labor supply costs; (iii) availability and cost of materials, tools, and equipment; and (iv) other similar issues pertinent to the performance of the Work.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.4.1 The Contractor represents that prior to execution of the Contract, it has consulted with an attorney, that the attorney has reviewed all of the Contract Documents and that the Contractor has signed the Contract Documents only after such consultation with its attorney. Accordingly, the maxim that this Contract shall be construed against the Party who drafted it shall not apply to the interpretation of this Contract or any of the Contract Documents.

§ 1.4.2 Severability. In the event that any term or provision, or part thereof, of this Contract or any of the Contract Documents is held to be illegal, invalid or unenforceable under applicable law by a court of competent jurisdiction, such term or provision, or part thereof, shall be deemed ineffective to the extent of such invalidity or unenforceability only and severed from the Contract Documents and the remaining term(s) and provision(s) shall remain unaffected thereby.

§ 1.4.3 Captions. Titles or captions of Articles, Sections, and Exhibits contained in the Contract Documents are inserted only as a matter of convenience and for reference, and in no way define, limit, extend or describe the scope of the Contract Documents or the intent of any provision hereof.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights, except to the extent set forth in the Owner-Architect Contract. The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

(Paragraphs deleted)

§ 1.5.3 Notwithstanding the preceding sections 1.5.1 and 1.5.2, nothing contained in this Section 1.5 or elsewhere in the Contract Documents shall modify the rights granted to Owner by Architect in relation to the Instruments of Service as set forth in the separate agreement between Owner and Architect.

§ 1.6 References to trade publications, industries, and published standards shall carry the latest date, including latest revisions, unless dated to the contrary. Further, all work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others. All work shall conform to the National Electric Code, the National Board of Fire Underwriters and applicable City, Town and State Building Codes and Authorities having jurisdiction.

§ 1.7 The Contractor and all Subcontractors shall refer to all of the Drawings, including those showing primarily the work of the plumbing, heating, ventilation, air conditioning, electrical, and other specialized trades, and to all of the sections of the Specifications, and shall perform all work reasonably inferable therefrom as being necessary to produce the indicated results.

§ 1.8 All indications or notations on the drawings which apply to one of a number of similar situations, materials, or processes shall be deemed to apply to all such situations, materials, or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

§ 1.9 The general character of the detailed work is shown on the drawings, but minor modifications may be made on the full size drawings. Any details shall be worked out in relation to their location and their connection to other parts of the work. Where details or conditions are indicated in summary form, such details or conditions shall be continued throughout the course or parts in which they occur. The Contractor shall be responsible for the complete and correct application of such details throughout the portions of the project in which they occur.

§ 1.10 Should the Architect's written interpretations, in the opinion of the contractor, show additional work, or work of more expensive character than that shown or inferred by the Contract Drawings, it shall be the duty of the Contractor to so notify the Architect through the Construction Manager within five (5) days from receipt of same in order that proper adjustment may be made if found justifiable in the opinion of the Architect, Construction Manager, and the Owner. The Contractor shall assume full responsibility for all such work done without the approval of the Architect, the Construction Manager, and the Owner.

§ 1.11 Confidentiality

§ 1.11.1 The Contractor warrants and represents that the Contractor shall not knowingly or negligently communicate or disclose at any time to any person or entity any information in connection with the Work or the Project, except: (1) with prior written consent of the Owner, (2) information that was in the public domain prior to the date of this Agreement, (3) information which becomes part of the public domain by publication or otherwise not due to any unauthorized act or omission of the Contractor, (4) as may be required to perform the Work or by any applicable law, or (5) for purposes of coordination with other prime contractors.

§ 1.11.2 The Contractor, any time upon request of the Owner, shall immediately return and surrender to the Owner all copies of any materials, records, notices, memoranda, recordings, drawings, specifications, and mock-ups and any other documents furnished by the Owner of the Architect to the Contractor.

§ 1.11.3 The Contractor shall specifically cause all Subcontractors or any other person or entity performing any services or furnishing any materials or equipment of the Work to warrant and represent all items set forth in this Paragraph 1.6.

§ 1.11.4 The representations and warranties contained in this Paragraph 1.11 shall survive the complete performance of the Work or earlier termination of this Agreement.

§ 1.12 Notice

§ 1.12.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.12.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.13 Submittal Exchange

Submittal Exchange, a web-based construction phase software for managing project submittals, RFI's, and other construction phase paperwork, shall be used by all parties on this project. The Architect will be the administrator for the Submittal Exchange system on this project.

§ 1.13.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect and/or Construction Manager for services required by the Contractor's failure to use Submittal Exchange in the submission and processing of construction phase paperwork.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Lakeland Central School District is the Owner and the Board of Education of the Lakeland Central School District shall be the only entity with authority to bind the Owner or provide approval or authorization on behalf of the Owner as required by law and/or the policies and procedures of the Lakeland Central School District unless Contractor is notified otherwise in writing signed by the Owner. Except as otherwise provided in Section 4.2.1 or Article 4, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative. With respect to any Claim by Contractor, including without limitation any Claim for a Change Order or any Claim for an extension of the Contract Time or upward adjustment of the Contract Sum, any rejection of such Claim, either in whole or in part, made by Construction Manager or the Architect to Contractor shall be deemed to have been made by the Owner unless the Owner's decision to the contrary is set forth in writing.

(Paragraph deleted)

§ 2.2 Information and Services Required of the Owner

§ 2.2.1 With the exception of the building permit, all permits and fees, approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities are the responsibility of the Contractor under the Contract Documents. Contractor's price shall include all fees and other costs for securing and maintaining (by Contractor or its Subcontractors) for the life of the Project: all permits, PE licenses, connection fees, inspections, etc., applicable to, or customarily secured for the Work. This provision includes any permits to be issued in the name of the Contractor as required for the Work. The Contractor shall furnish Construction Manager and Architect or Owner with original copies of all permits prior to the commencement of Work and shall prominently display a copy of all permits at a location agreed upon with the Construction Manager or Owner

§ 2.2.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.2.3 The Owner shall retain a construction manager lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.2.4 If reasonable requested by the Contract in writing, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.5 Following receipt of a reasonable written request from the Contractor, the Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's reasonable written request for such information or services.

§ 2.2.7 The Owner shall furnish the Contractor two copies of the Contract Documents, including one set to be used for the Project Record Drawings. The Contractor may purchase additional copies, at his own expense, at the cost of reproduction, postage and handling.

§ 2.2.8 The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

§ 2.3 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents or fails to carry out Work in accordance with the Contract Documents, or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials, or equipment so as to permit the Owner to reasonably infer that

the Contractor will not be able to complete the Work within the Contract Time or fails to remove, bond or discharge (within thirty [30] days after actual notice or notice pursuant hereto from the Owner or the Construction Manager) any lien filed upon or against Owner's property or against the Project funds by anyone claiming by, though, or under Contractor, or disregards the instructions of Construction Manager, Architect or Owner when such instructions are based upon the requirements of the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated to the satisfaction of the Owner, in its discretion; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

(Paragraphs deleted)

§ 2.4 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents or is otherwise in default of any term of the Contract Documents, and fails within a three-day period after delivery of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness (to the reasonable satisfaction of the Owner), the Owner may at the end of such three-day period with no further notice required, without prejudice to other remedies the Owner may have, correct such deficiencies.. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect or failure, and also including, without limitation, the Owner's reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), and all other reasonable expenses relating thereto. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. Such Change Order shall be deemed to have been executed by the Contractor, whether or not actually signed by the Contractor. The right of the Owner to stop and carry out the Work (or any portions thereof) pursuant to this paragraph shall not give rise to any duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

(Paragraphs deleted)

§ 2.5 Owner's Right to Audit. Contractor shall keep full and accurate records of all costs incurred and items billed in connection with the performance of the Work, which records shall be open to audit by the Owner or its authorized representatives during performance of the Work and until six (6) years after Final Payment. In addition, the Contractor shall make it a condition of all subcontracts relating to the Work that any and all Subcontractors will keep accurate records of costs incurred and items billed in connection with their work and that such records shall be open to audit by the Owner or its authorized representatives during performance of the Work and until six (6) years after its completion.

§ 2.6 Owner's rights stated in this Article 2 are cumulative and not in limitation of any rights of the Owner granted elsewhere in the Contract Documents, or at law or in equity. Further, it is expressly understood that notwithstanding any of the rights and authority granted the Owner in this Article 2 or elsewhere in the Contract Documents, in no event shall the Owner, Construction Manager or Architect have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The plural term "Multiple Prime Contractors" refers to persons or entities who perform construction under contracts with the Owner that are administered by the Construction Manager. The term does not include the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

§ 3.1.3 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.4 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Submission of its bid to the Owner and subsequent execution of the Contract by the Contractor is a representation that the Contractor has carefully examined the Contract Documents and has visited and has performed a detailed investigation of the site, become thoroughly familiar with the nature and local conditions under which the Work is to be performed (including but not limited to its condition, layout, nature, surrounding areas, climatic conditions, etc.) and all matters which may in any way affect the Work or its performance and correlated personal observations and investigations with requirements of the Contract Documents. Submission of its bid to the Owner and subsequent execution of the Contract by the Contractor is a further representation that the Contractor has carefully examined the Contract Documents (with such review in Contractor's capacity as a contractor and not a design professional unless otherwise specifically provided in the Contract Documents) and that any errors, omissions, ambiguities, discrepancies or conflicts found in said Contract Documents have been brought to the attention of the Architect for clarification prior to the Contractor's submission of its bid. The Contractor further represents that as a result of its examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose and is familiar with all federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to the Work, and that the Contractor will abide by same. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any other improvements located on the Project site. As required by this Contract, the Contractor shall be responsible for providing a safe place for the performance of the Work. Claims for extension of the Contract Time or additional compensation as a result of the Contractor's failure to follow the foregoing procedures and to familiarize itself with all local conditions and the Contract Documents shall not be allowed.

§ 3.2.1.1 The Contractor is deemed to be a qualified expert in the systems and construction requirements of the Work of its Contract. The Contractor hereby specifically acknowledges and declares that the Contract Documents are full and complete, are sufficient to have enabled it to determine the cost of the Work and that the Drawings, the Specifications and the Addenda are sufficient to enable the Contractor to construct the Work outlined therein in accordance with all federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to the Work, and otherwise to fulfill all of its obligations under the Contract Documents. In addition, if the Contractor performs any construction activity while it knows or should have known that any of the Contract Documents contains an error, inconsistency or omission, the Contractor shall be responsible for such performance and shall bear the costs for correction thereof.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before ordering any materials and before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it and otherwise verify all field conditions. Contractor shall be responsible for the correctness of all measurements. Contractor shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors or omissions in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by , made known to or that should have been discovered by the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require before commencing activities. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. Any errors due to the Contractor's failure to so verify all such grades, elevations, locations or dimensions shall be promptly rectified by the Contractor without any additional cost to the Owner.

§ 3.2.2.1 The accuracy of grades, elevations, dimensions, or locations of existing conditions is not guaranteed by the Construction Manager, Architect or Owner, and the Contractor is responsible for verifying same. No extra charges or compensation or extension of the Contract Time will be allowed on account of differences between actual dimensions and the dimensions indicated on any Drawings or elsewhere in any Contract Documents. Any difference that may be found shall be submitted to the Construction Manager and Architect for resolution before proceeding with the Work.

§ 3.2.2.2 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit through the Construction Manager detailed drawings of such departure for the approval of the Architect before making the change.

§ 3.2.2.3 In case of omissions or discrepancies between the Contract Documents, the Contractor shall secure instructions from the Architect through the Construction Manager before proceeding with the Work affected by omissions or discrepancies. The Contractor shall assume full responsibility and cost for proceeding with such Work without approval.

§ 3.2.2.4 During the course of Work, should any errors, omissions, ambiguities, discrepancies or conflicts be found on the Drawings or in the Specifications to which the Contractor has failed to call attention before submitting its bid, the Architect through the Construction Manager shall interpret the intent of the Drawings and Specifications and the Contractor hereby agrees to abide by the Architect's interpretation and agrees to carry out the Work in accordance with the decisions of the Architect at no additional cost to Owner or compensation for Contractor and with no extension of the Contract Time.

§ 3.2.2.5 **Salvageable Materials:** All existing materials, equipment, misc. etc. scheduled for demolition are the property of the Owner. If requested or as identified in Project Documents, Contractors will remove and store any such items to a location designated by the Owner.

§ 3.2.2.6 Do not scale Drawings. Follow figure dimensions, confirming on site.

§ 3.2.3 The Contractor in its review of the Contract Documents as required herein is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity of the Contract Documents with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful order of public authorities discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that it is entitled under the Contract Documents to either or both of an increase in the Contract Sum or extension of the contract time because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 and its subsections or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 and its subsections or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations.

§ 3.2.5 The Contractor may submit requests for information to the Architect through the Construction Manager to help facilitate the Contractor's performance of the Contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

§ 3.2.6 Each request for information shall be submitted to the Architect through the Construction Manager, in writing, on the form immediately following these Conditions. Each request for information shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 3.2.7 The Contractor shall submit each request for information sufficiently in advance of the date by which such information is required in order to maintain the construction schedule and allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest construction schedule.

§ 3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. Where the Contract Documents refer to particular construction means, methods, techniques, sequences or procedures or indicate or imply that such are to be used in the Work, such reference is intended only to indicate that the operations of the Contractor shall be such as to produce at least the quality of work implied by the operations described, but the actual determination of whether or not the described operations may be safely and suitably employed on the Work shall be the sole responsibility of the Contractor.

§ 3.3.1.1 The Contractor shall, prior to start of any portion of the Work:

- .1 review any specified construction or installation procedures, including those as may be recommended by the proposed manufacturer(s);
- .2 advise the Architect through the Construction Manager, in writing, if the specified procedure or procedures deviate from good construction practice;
- .3 advise the Architect through the Construction Manager, in writing, if following said procedure or procedures will affect any warranty, including Contractor's general warranty;
- .4 advise the Architect through the Construction Manager, in writing, of any objections the Contractor may have to the specified procedure or procedures;
- .5 propose to the Architect through the Construction Manager, in writing, any alternative procedure or procedures which the Contractor will warrant.

§ 3.3.1.2 All loss, damage, or liability, or cost of correcting defective Work arising from the employment of any construction means, methods, techniques, sequences or procedures shall be borne by the Contractor notwithstanding that such construction means, methods, techniques, sequences or procedures may be referred to, indicated or implied by the Contract Documents; it being understood that in no event shall the Owner, Construction Manager or Architect have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of the Project already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.3.4 The Contractor shall inspect all materials as delivered to the premises and shall reject any materials that will not conform to the Contract Documents when properly installed.

§ 3.3.5 The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the Work or Project. Failure to obtain any permits, licenses or other approvals because of the failure of the Contractor to conform to this requirement shall not extend the Contract Time, and the Contractor shall not be entitled to any increase in the Contract Sum therefore. In addition, any additional costs and/or expenses of any nature incurred by the Owner as a result of the Contractor's failure to conform to this requirement shall constitute a charge against the Contractor's Contract.

§ 3.3.6 Contractor shall perform all Work in accordance with all requirements of all federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to the Work.

§ 3.3.7 During periods of active construction, Contractor shall consult daily and cooperate with the Construction Manager, Architect and Owner. On a continuous and daily basis, Contractor shall keep the Construction Manager, Architect and Owner notified of when Work will be starting, restarting, suspended and temporarily or permanently concluding.

§ 3.3.8 Contractor shall attend all meetings, at a minimum on a weekly basis, as required by the Owner and/or the

Construction Manager or Architect to be held at a location as may be determined by Construction Manager or Owner. These meetings will be held to arrange for a satisfactory performance of the Work of this Contract and/or the coordination of all Multiple Prime Contractors so as not to impede the progress of the Project. Failure of Contractor to attend said weekly (at a minimum) meetings shall be deemed a material breach of this Contract. Contractor shall be responsible for all delays and/or expenses incurred for failure to attend meetings and any coordination difficulty.

§ 3.3.9 Contractor shall provide copies of its daily construction reports to the Construction Manager or any other individual so identified by Owner for such purpose. Unless otherwise specified, these reports shall be submitted no later than 10:00 am the following workday. The daily reports shall be for Construction Manager's and Owner's information and provide detailed information as required by the Construction Manager or Owner concerning the Contractor's activities and operations only. If any type of 'daily construction' form is provided by Construction Manager or Owner for purposes of compliance with this section, such form shall be used by Contractor.

§ 3.3.10 Unless otherwise requested by Construction Manager, or specified elsewhere in the Contract Documents, Contractor shall submit two-week look ahead schedules identifying the anticipated activity and material needs for all of the Work scheduled to be performed by the Contractor and its Subcontractors for the identified time period. The Contractor shall keep this schedule current and provide a bi-weekly report to the Construction Manager and Owner concerning the actual performance and activity compared to the two-week look ahead. If a form is provided by Construction Manager for the purpose of compliance with this section, such form shall be used by Contractor.

§ 3.3.11 In addition to the Owner's right to take Work away (set forth in Section 2.4), if Contractor fails to keep the site safe and clean within four (4) hours of being notified by the Construction Manager or Owner, either verbally or in writing, the Construction Manager or Owner may, at Owner's option, have this Work performed and back charged to Contractor at prevailing overtime rates plus 15%. For purposes of this section, notwithstanding anything contained to the contrary in the Contract Documents, verbal notice to field personnel is deemed notice to the Contractor. Owner's rights pursuant to this paragraph shall not give rise to any duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

§ 3.3.12 Contractor shall allow sufficient time to inspect and accept the Work of other Multiple Prime Contractors and Owner's other contractors. Should any discrepancies be discovered, the Contractor shall provide notice to Construction Manager sufficiently in advance so that Construction Manager and Architect may have sufficient time to review same and corrective action can be taken (by all necessary parties) without affecting the progress of any Multiple Prime Contractor or Owner's other contractors or the Work.

§ 3.3.13 Unless otherwise requested by Construction Manager, or specified elsewhere in the Contract Documents, one (1) week after issuance of a Notice to Proceed or commencement of Work, whichever is earlier, Contractor shall provide two (2) copies of a video-taped recording of all existing conditions to the Owner through the Construction Manager. This taping shall provide a record of all relevant existing buildings, grounds, exterior conditions and interior conditions which may be affected by the Work. Contractor shall schedule a representative of both the Owner and the Construction Manager to be present at this taping. In the absence of this record, the Contractor shall be estopped from asserting that any damage to existing conditions/property was to any extent pre-existing when Owner or the Construction Manager asserts that such damage was caused by Contractor.

§ 3.3.14 Contractor must exert **due** care and diligence when working in or near any existing buildings or site work which is to remain. The absence of protection around such items shall not excuse the Contractor from its responsibility to provide protection. Any damages **due to the Contractor's failure to discharge such responsibilities** to the existing buildings, site work or facilities shall be repaired **by** the Contractor **at its sole cost and expense and if Contractor cannot repair the same, it shall bear the cost thereof.**

§ 3.3.15 All disconnect and/or tie-in Work involving any utilities that would interfere with the ongoing operations of the Owner shall be completed on an after-hours basis at a time that is mutually agreeable to the Owner so as not to impact the Owner's operations. The performance of this Work shall be projected on the required schedules and the Construction Manager, Architect and Owner are to be notified at least forty-eight (48) hours in advance of commencing this Work. All overtime and standby personnel necessary to complete these tie-ins shall be the responsibility of the Contractor.

§ 3.3.16 In the event that Owner makes arrangements to open a building at the request of Contractor and the

Contractor does not appear at the designated time and location, the Contractor shall pay the Owner for all costs incurred relating to the opening of said building for Contractor.

§ 3.3.17 Contractor shall provide to Owner and Construction Manager, as either of them may request, copies of all correspondence, memoranda and bulletins to and from the Construction Manager, Architect, Subcontractors, suppliers, public agencies, and others on the Project.

§ 3.3.18 Contractor agrees that it shall not permit any unauthorized persons or entities to visit or enter upon the Project site absent Construction Manager's or Owner's prior approval.

§ 3.3.19 Contractor shall arrange for reasonable protection to secure the Site against theft and vandalism and arrange for reasonable protection of adjoining property in agreement with Construction Manager and owner.

§ 3.3.20 Contractor shall develop methods of dust and fume control **so as to comply with applicable legal requirements.**

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. The Contractor shall check all materials and labor entering into the Work site and shall keep full detailed accounts thereof.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect, in consultation with the Construction Manager, and in accordance with a Change Order or Construction Change Directive.

§ 3.4.2.1 After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 01 of the Specifications). By making requests for substitutions, the Contractor:

- .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions for convenience after the period noted in Division 01 Section "Substitution Procedures" and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall maintain labor peace for the duration of the Project. Should any disorderly, incompetent or objectionable person be hired or employed by the Contractor or be let upon or about the premises of the Owner, for any purpose or in any capacity, he/she shall, upon request of the Construction Manager or Owner, be removed from the Project and not again assigned thereto without written permission of the Construction Manager or Owner. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum or extension of the Contract Time.

§ 3.4.3.1 Union Disputes/Labor Harmony

§ 3.4.3.1.1 The Contractor shall employ only labor on the Project or in connection with its Work capable of working harmoniously with all trades, crafts and any other individuals associated with the Work to be performed. There shall be no strikes, picketing, work stoppages, slowdowns or other disruptive activity at the Project for any reason by anyone employed or engaged by the Contractor to perform any portion of its Work. There shall be no lockout at the Project by the Contractor. The Contractor shall be responsible for providing the manpower required to proceed with the Work under any circumstance. Should it become necessary to create a separate entrance for a Contractor involved in a labor dispute, all costs associated with creating that entrance shall be borne by the Contractor involved in the dispute. Such costs shall include, but not be limited to, signage, fencing, temporary roads and security personnel as deemed necessary by the Owner for the safety of the occupants of the site.

§ 3.4.3.1.2 If Contractor has engaged the services of workers and/or Subcontractors who are members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Owner and without recourse to the Construction Manager, Architect or the Owner, any conflict between its Contract with the Owner and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the Work of any particular trade.

§ 3.4.3.1.3 In case the progress of the Work to be performed by the Contractor is affected by any undue delay in furnishing or installing any items or materials or equipment required pursuant to its agreement with the Owner because of a conflict involving any such labor agreement or regulation, the Owner may require the other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive but in no case shall the amount of such change be charged by the Contractor to the Owner as an additional cost to perform the Work pursuant to its Contract.

§ 3.4.3.1.4 The Contractor shall ensure that its Work continues uninterrupted during the pendency of a labor dispute.

§ 3.4.3.1.5 The Contractor shall be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes.

§ 3.4.4 A sufficient force of competent workers, foremen, and superintendents shall be employed at all times to permit the Work to be pursued with diligence until completion.

§ 3.4.5 No materials or supplies for the Work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale or other arrangement by which an interest is retained by the seller. The Contractor warrants that it has good title to all materials and supplies used by it in the Work, or resold to Owner, pursuant to the Contract Documents, free from all liens, Claims or encumbrances.

§ 3.4.6 Contractor shall comply with the Contract requirements and all applicable federal, state and local laws, including but not limited to provisions of the New York State Labor Law concerning hours of work, prevailing rate of wages (as published by the Bureau of Public Work, State of New York, Department of Labor and as may be included in the Contract Documents), minimum wages, working conditions, prevailing wage enforcement, notices to be posted at the Project site, and employment and payroll records.

§ 3.4.6.1 The Contractor shall maintain in a secure location the original payrolls or transcripts thereof which the Contractor and its Subcontractors are required to maintain pursuant to New York State Labor Law. The Contractor and its Subcontractors shall submit original payrolls or transcripts, subscribed and affirmed by it as true, with each and every Application for Payment. The Contractor and Subcontractors shall produce within five (5) days on the Project site and upon a written order of the Construction Manager, Owner, or relevant legal authority having jurisdiction over the Project or Work, such original payrolls or transcripts thereof, subscribed and affirmed by it as true, and the statements signed by each worker. In addition, the Contractor and its Subcontractors shall furnish to the Construction Manager or Owner upon written demand any other information to satisfy the Construction Manager or Owner that this Section 3.4.6 and the New York Labor Law, as to the hours of employment and rates of wages are being observed. The Contractor shall maintain the payrolls or transcripts thereof for six (6) years from the date of completion of the Work of this Contract.

§ 3.4.6.2 When directed by the Construction Manager or Owner, the Contractor shall provide the Construction Manager with an attendance sheet for each day of which Work is performed on the Project site. Such attendance sheet shall be in a form acceptable to the Construction Manager or Owner and shall provide information for employees of the Contractor and its Subcontractors.

§ 3.4.7 All materials used permanently in the Work shall be new unless otherwise specified. The apparent silence of the Specifications as to any detailed description concerning any Work to be done and materials to be furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the first quality are to be used, and all interpretations of the Specifications shall be made on this basis. All material incorporated in the Project shall be clean and exhibit no appearance of aging, exposure to weather, prior use, handling or damage of any kind.

§ 3.4.8 Manufacturer's identification shall be inconspicuous, but where nameplates contain information relative to characteristics or maintenance, they shall be clearly visible and located for easy access.

§ 3.4.9 Equipment intended for permanent installation shall not be operated for temporary purposes without the written permission of the Construction Manager and Owner.

§ 3.4.10 Materials shall be delivered in manufacturer's original sealed containers, with complete identification of contents and manufacturer, and kept sealed in original containers until installed/used. Labels shall not be removed until materials have been installed and inspected.

§ 3.4.11 Whenever the Contract Documents require delivery by the Contractor of any materials, equipment, or other items, the term delivery shall be deemed to include unloading and storing with proper protection where directed.

§ 3.4.12 Where material is specified to be furnished by others or furnished and delivered only, the Contractor installing the material shall be responsible for scheduling the delivery and receiving, unloading, storing, handling, relocating, hoisting, distribution, laying out and installing the material.

§ 3.4.15 Contractor shall include in its base price the cost of all rigging and equipment required for the performance and installation of its Work.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be the best quality and new. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects. Work, materials, or equipment not conforming to these requirements will be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager, Architect, or Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. The warranty provided in this Section 3.5 shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

§ 3.5.2 All warranties and/or guarantees shall include labor and materials and shall be signed by the manufacturer or Subcontractor as the case may be and countersigned by the Contractor. All warranties shall be addressed and assigned to the Owner and delivered to the Construction Manager upon completion of the Work and before the request for Final Payment. Contractor shall perform all Work in such a manner so as to preserve any and all such manufacturers' warranties.

§ 3.5.2.1 The Contractor will exercise its best efforts to service and to enforce for the benefit of Owner all manufacturers' warranties on all materials, equipment and fixtures incorporated into the Work.

§ 3.5.3 The warranties set forth herein shall survive completion, expiration and/or termination of this Contract.

§ 3.5.4 The Contractor will make good at its own cost and expense all defects and all damage caused to the Owner, due to correcting defective Work that is under warranty / guarantee. All corrections to defective Work shall be made at the convenience of the Owner.

§ 3.5.5 The Contractor represents that it is a manufacturer's approved Contractor in connection with the Work and will furnish the manufacturer's warranty to the Owner and Construction Manager.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. Notwithstanding the preceding, New York State sales tax is not applicable to any materials and supplies to be incorporated into the Project under the terms of the Contract, the Owner being exempt therefrom. There is no exemption from the sales or use tax on charges to the Contractor by any Subcontractor for the lease of tools, machinery, equipment or other property used in conjunction with the Project. The Contractor and its Subcontractors shall be solely responsible for and pay any and all applicable taxes, including sales and compensation for use taxes, on such leased tools, machinery equipment or other property, and for materials not incorporated in the Project and the amount of such taxes, if any, shall be deemed included in the bid submitted. Upon request, the Owner shall supply to the Contractor, an exemption certificate for such tax.

§ 3.7 Permits, Fees, Notices, and Compliance with Laws

§ 3.7.1 The Owner shall, if same is required, secure and pay for the general building permit from the New York State Education Department only. Without limitation, the mechanical, electrical and plumbing permits, the health and environmental impact fees due to water and sewer connections, if any, and all other fees and permits necessary for the Work of the Project shall be secured and paid for by the individual Prime Contractors. The Contractor, in securing other permits for construction or with regard to any other aspect of the Work which requires a permit, notwithstanding any contrary language in the Contract, shall at its own cost and expense make the necessary arrangements to complete, file and have sealed by a Professional Engineer licensed in the jurisdiction, any and all preliminary affidavits of certification that may be required by the governing agency or agencies having jurisdiction for issuing permits for the Work which are legally required when bids are received, but in any case, prior to starting Work.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. Contractor shall pay any costs or fees incurred in such compliance and any fines or penalties imposed for violation thereof. In addition, Contractor shall to the fullest extent permitted by law indemnify, defend, and hold harmless the Owner, Construction Manager, and Architect (and their employees, officers, and agents) from any resulting fines, penalties, judgments or damages, including reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder) imposed on, or incurred by such indemnified parties due to any such violation (or alleged violation). This provision shall survive the completion or earlier termination of the Contract.

§ 3.7.2.1 The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the Work and secure approval of and comply with requirements of all such authorities and deliver certificates of approval to the Construction Manager and Owner, and shall prepare all documents, including drawings, necessary to secure such approval.

§ 3.7.2.2 In accordance New York State Labor Law Article 8, Section 220, subd. 3-a(a), the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.

§ 3.7.2.3 The Contractor shall comply with all applicable New York State Department of Labor requirements, including the provision that every worker employed in performance of a public work contract shall be certified as having completed an OSHA 10-hour safety training course. The Contractor and subcontractor shall be solely responsible for compliance with this requirement with respect to their employees. The Contractor's or subcontractor's failure to comply with this requirement shall not transfer or in any way impose the responsibility for worker safety upon the Owner or the Architect.

§ 3.7.2.4 Certificate of Occupancy:

- .1 It shall be the responsibility of the Contractor to obtain all necessary approvals and releases from governing agencies having jurisdiction and to satisfy all requirements for the issuance and obtaining of any required certificates of occupancy.

- .2 At such time as the Contractor makes application for any required certificate of occupancy, it shall, at its own cost and expense, file and have sealed by a Professional Engineer licensed in the jurisdiction, the final affidavit(s) of certification that the Project has been constructed in conformance with filed documents, ordinances, rules and regulations and such other data that may be required by the governing agency or agencies having jurisdiction over this Project.
- .3 Said certificate (if required for the Work of the Project) shall be turned over to the Construction Manager and Architect prior to certification of Final Payment and in conjunction with same.

§ 3.7.3 If the Contractor performs Work where it knows or should have known it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction. It shall be the obligation of the Contractor to review the Contract Documents to determine and to notify the Construction Manager and the Architect of any discrepancies between building codes and regulations of which the Contractor has knowledge or should be reasonably able to determine.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the Contractor disputes the Architect's determination or recommendation, the Contractor may submit a Claim as provided in and subject to Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests/Claims for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in and subject to Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct..

§ 3.8.2 Unless otherwise provided in the Contract Documents:

- .1 Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Lump Sum Allowances, Unit Cost Allowances and Quantity Allowances: Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;
- .3 Contingency Allowances: Contractor's costs, including all such subcontractor costs, for receiving and handling at Project site, labor, installation, and similar costs related to products and materials under allowance shall be included as part of the allowance. Contractor, and subcontractor, Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance; and

- .4 Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- .5 The Architect shall create and process Allowance Access Authorizations for the Construction Manager and Owner's approval and execution in accordance with the Contract Documents.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.8.4 Refer to Division 01 Section "Allowances" for additional information.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants. Prior to starting the Work, the Contractor shall designate the project manager, superintendent and other key individuals who shall be assigned to the Project through and including final completion. Such designation shall be in writing and provided to the Construction Manager, Architect and Owner. The superintendent shall be in attendance at the Project site throughout performance of the Work, including full completion of the punch list. The superintendent shall not be employed or used on any other project during the course of the Work. The superintendent shall be subject to approval by the Owner in its sole discretion. Said superintendent shall be qualified in the type of Work to be undertaken and shall not be changed during the course of construction without the prior written consent of the Owner in its discretion. Should the superintendent leave the Contractor's employ, Contractor shall promptly designate a new superintendent. Owner shall have the right, at any time, to direct a change in the Contractor's superintendent or any of its representatives if their performance is unsatisfactory in the determination of Owner in its discretion. In the event of such demand, Contractor shall, within five (5) days after delivery of notification thereof, replace said individual(s) with an individual satisfactory to Owner. . The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The Owner shall have no obligation to direct or monitor the Contractor's employees. All references herein to the superintendent shall be taken to mean the Contractor's superintending staff. All substantive communications from Contractor to Construction Manager, Architect or Owner shall be made and/or confirmed in writing by Contractor.

§ 3.9.2 The Contractor shall coordinate and supervise the work performed by Subcontractors so that the work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the work. The Contractor and all Subcontractors shall afford each trade reasonable opportunity for the installation of their work and the storage of their materials.

§ 3.9.3 It is required of any and all supervisory personnel proposed for use by any Contractor that said personnel be versed in the written and spoken English language or, said Contractor shall furnish a full-time on-site interpreter to facilitate communications between the Owner's Representative, Construction Manager and the Architect.

§ 3.9.4 Contractor shall furnish the Owner's Representative in writing the names, addresses and telephone numbers of the members of his organization who can be contacted in the event of an off-hours emergency at the building site.

§ 3.9.5 The Contractor shall attend progress meetings with the Owner's Representative and such other persons the Owner may wish to have present. The progress meetings shall include all key personnel on the job, including the Contractor and Subcontractors, or other persons in charge of various phases of the work.

§ 3.10 Contractor's Construction Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information, and the Construction Manager's approval, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor shall cooperate with the Construction Manager in

scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces.

§ 3.10.1.1 Submission of an accepted Construction Schedule shall be a prerequisite to initial payment. If the schedule is not submitted by said dates the Contractor has acknowledged his approving the Owner to complete a schedule for the Contractor. Such schedule will become the product and ownership of the Contractor and the Contractor will be back-charged all costs pertaining to the service of producing the schedule. The Contractor shall provide revised schedules at appropriate intervals as required by the Conditions of the Work and Project.

§ 3.10.1.2 Revisions to the schedule shall be approved by the Owner.

§ 3.10.2 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.3 The Contractor shall perform the Work in accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.10.4 Submittals for all long lead time items shall be provided to the Construction Manager and Architect within ten (10) days of Board of Education approval of bid/contract.

§ 3.10.5 The Contractor shall be responsible for coordinating and expediting its fabrication and delivery schedules and keeping the Construction Manager, Architect and Owner informed as to its progress and its anticipated ability to stay on schedule. The Contractor shall monitor the progress of the Work for conformance with the Project Schedule and shall promptly advise Construction Manager and Owner of any delays or potential delays. Contractor shall update and coordinate its construction schedule with the Project Schedule once a month or more frequently if requested.

§ 3.10.5.1 Without limitation to Section 3.10.5 above, the Contractor shall submit progress/status reports on fabrication on long lead items (items requiring four (4) weeks and over to fabricate) to the Construction Manager, Architect and Owner every week.

§ 3.10.6 The Contractor shall schedule, coordinate and perform its Work, in cooperation with the Construction Manager, Architect and Owner, so as to avoid conflict, delay in, or interference with the Work of other Multiple Prime Contractors or operations of the Owner's own forces. The Contractor is solely responsible for the accuracy and adequacy of the scheduling information it provides to the Construction Manager, Architect and Owner as necessary for preparation of the overall Project Schedule; therefore, the Contractor is solely responsible for the accuracy and adequacy of the Project Schedule (or its updates) as it pertains to the Contractor's Work.

§ 3.10.7 TIME IS OF THE ESSENCE to the Owner for the Contractor's completion of its Work and completion of the Project. Accordingly, the Contractor shall prosecute the Work diligently, using such means and methods of construction in accord with the requirements of this Contract and as will assure its completion not later than the date specified in the Contract Documents (or on the date to which time for completion may be extended only as consistent with the terms of this Contract).

§ 3.10.8 The Contractor shall include in its base price, all out of sequence Work and any Work required to be performed during overtime hours or non-working hours necessary to maintain the Project Schedule or any separate Owner's move-in schedule.

§ 3.10.9 The Owner shall have the right to direct a postponement or rescheduling of any date or time for the performance of any part of the Work that may interfere with the operation of the Owner's premises or any tenants or invitees thereof. The Contractor shall, upon the Owner's request, reschedule any portion of the Work affecting operation of the premises during hours when the premises are not in operation. Any postponement, rescheduling or performance of the Work under this Section 3.10.9 may be grounds for an extension of the Contract Time, if permitted and subject to all provisions relating to such, so long as additionally: (1) the performance of the Work postponed or rescheduled was originally properly scheduled by the Contractor in compliance with the requirements of the Contract Documents and (2) such rescheduling or postponement is required so there is no disruption of the Owner's normal

operations, including no disruption to instructional delivery resulting from construction.

§ 3.10.10 If the Contractor shall fail to adhere to the approved Project Schedule, it shall (at no additional cost to Owner) promptly adopt such other means and methods of construction as will make up for the time lost and will assure completion in accordance with the approved Project Schedule.

§ 3.10.11 When the Contract Documents use the term "coordinate" and "coordination" in relation to the Contractor, those terms shall refer to the obligation of the Contractor to plan and direct its Work in cooperation and coordination with other Multiple Prime Contractors and with Owner's own forces at all times when the Work of the Contractor or its Subcontractors overlaps or dovetails with other work at the site, to the end that the overall Project Work is carried out continuously, in an efficient, workmanlike manner, without conflict between any trades, and so that no trade, at any time, causes delay to the general progress of the Work.

§ 3.10.12 The scheduling and coordination obligations of Construction Manager under this Contract are for the sole benefit of the Owner, and are not intended to create any rights whatsoever in favor of Contractor. The Contractor shall not have any Claim whatsoever against the Owner or Construction Manager or Architect arising out of any alleged neglect or failure on the part of Owner or Construction Manager or Architect to schedule or coordinate the Work of the Contractor.

§ 3.11 Documents and Samples at the Site

The Contractor shall maintain, at the Project site, for the Owner, in addition to the Project Record copy held by the Construction Manager, one copy of the Drawings, Specifications, Addenda, Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These documents shall be available to the Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed, and signed by the Contractor, certifying that they show complete exact "as-built" conditions, stating sizes, kind of materials, vital piping, conduit locations and similar matters. Project Record Documents are hereby made part of this paragraph.

§ 3.11.1.1 Each Prime Contractor shall provide a copy of daily field reports to the Construction Manager at the end of each week.

§ 3.11.1.2 The Contractor shall maintain at the Project site, and shall make available to Owner and Architect, one record copy of the Drawings (the "Record Drawings") in good order.

§ 3.11.1.3 The Record Drawings shall be prepared and updated during the prosecution of the Work.

§ 3.11.1.4 Final payment and any retainage shall not be due and owing to Contractor until the Drawings receive the approval from the Architect and the Owner (and all other close-out requirements are met).

§ 3.11.1.5 The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to government inspectors and other authorized agencies. All approved Drawings shall be wrapped, marked and delivered to the Owner within thirty (30) days of final completion of the Work.

§ 3.11.2 The Contractor shall maintain current at the site at least one (1) set of record Contract Drawings on which shall be shown in a neat and accurate manner the actual installation of the Work, indicating thereon any variations from the Contract Drawings. Changes, whether resulting from formal Change Orders, Construction Change Directives, or other instructions issued by the Construction Manager or Architect, shall be recorded and shall include without limitation change in sizes, grades, locations and dimensions, and substituted materials.

§ 3.11.2.1 This process shall incorporate both the changes noted above and all other deviations from the original Drawings, whether resulting from Project conditions encountered for from any other cause. Principal dimensions of concealed work shall be recorded.

§ 3.11.2.2 At the completion of the Project, these prints shall be submitted to the Construction Manager for Architect's final inspection and comment. The Contractor shall revise these drawings as required by Architect for legibility and accuracy, and they shall be submitted to Construction Manager and Architect for Owner's records. This shall also include an electronic copy of all such documents transmitted to the Construction Manager for the Owner.

§ 3.11.3 The Contractor shall prepare and maintain signed daily logs and reports containing among other things: the Contractor's employees at the site; the Subcontractors at the site and number of employees of each; the general work (and location of same) performed by Contractor and/or Subcontractors; temperature and weather conditions; and description in reasonable detail of any extraordinary or special occurrences or problems encountered and other similar relevant data as Construction Manager or Owner may reasonably require. Contractor shall make all such logs and reports available to Construction Manager and Owner at all times and shall immediately deliver copies of such to Construction Manager and Owner promptly upon request.

§ 3.11.4 The Contractor shall maintain on site and shall provide to Construction Manager and Owner, as Construction Manager or Owner may request, copies of all correspondence, memoranda and bulletins and other like documents to and from the Construction Manager, Architect, consultants, Subcontractors, suppliers, public agencies, and others on or relating to the Work of this Contract.

§ 3.12 Shop Drawings, Product Data, and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work. "Shop Drawings" as used herein includes fabrication, erection, layout and setting drawings; manufacturers' standard drawings; samples; schedules; descriptive literature, catalogs and brochures; performance and test data; calculations; wiring and control diagrams; all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems and methods of construction as may be required to show that the materials, equipment or systems and the position thereof conform to the Contract Documents. Shop Drawings shall establish the actual detail of all manufactured or fabricated items; indicate proper relation to adjoining Work; amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure; and incorporate minor changes of construction to suit actual conditions. One complete set of all product data and approved Shop Drawings shall be submitted to the Owner as part of the close-out requirements

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.3.1 The Contractor shall submit for review to the Architect through the Construction Manager samples of materials listed under each section of the Specifications. Samples shall be properly labeled for identification, consisting of the following: job titles, sample number, submission number, and label large enough to receive Architect's stamps.

§ 3.12.3.2 The Contractor shall not commence work under sections of the specifications until the Architect's approval in writing is obtained for all listed samples.

§ 3.12.3.3 The Contractor shall not construe approval of advance samples as total guarantee of acceptance of materials. Materials will be subjected to field inspections, from time to time, as work progresses.

§ 3.12.3.4 Samples of specific manufactured products shall be accompanied with appropriate manufacturer's literature at time of submission.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect and Construction Manager is subject to the limitations of Sections 4.2.10 through 4.2.12. Informational submittals upon which the Construction Manager and Architect are not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Construction Manager or Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of

other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors. Contractor shall review all submissions for completeness. Contractor is responsible to stamp all Shop Drawings prior to submission to the Construction Manager and Architect. All information requested in the Contract Documents or otherwise by the Construction Manager or Architect shall be provided by Contractor in the form and following such procedures prescribed by the Construction Manager and the Architect. Submittals/ Shop Drawings will be returned without review if the information is not provided as required or if procedures as prescribed are not followed to the Construction Manager's or Architect's satisfaction.

§ 3.12.5.1 Contractor shall generate a complete "Submittal Log" within one (1) calendar week of issuance of a Notice to Proceed or commencement of Work, whichever is earlier. This log shall list all required submittals specific to the trade as detailed in the Project Manual/Specifications. If Construction Manager provides a form for compliance with the terms of this Section, such form shall be used by Contractor.

§ 3.12.5.2 All submissions shall be sent to the Construction Manager and Architect by any method required by Construction Manager and Architect for such submission.

§ 3.12.5.3 Contractor shall provide one transmittal for each submission package identifying each unique submission individually. For each submittal with the submission package, the Contractor shall identify the length of the delivery time and the necessary "last date" an item may be received on site. Contractor shall keep a log of all of its submissions in a manner reasonably prescribed by the Construction Manager and Architect.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. The Architect's review of such Shop Drawing and submittals is for the purpose of checking for conformance with information given and the design concept expressed in the Contract Documents; and not for the purpose of determining the accuracy and completeness of details such as field/site dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect. The Contractor shall be responsible for all cost and expense relating to any work performed by it in violation of this Section.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Construction Manager and Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of

the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner, the Architect, and the Construction Manager shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Construction Manager shall review submittals for sequencing, constructability, and coordination impacts on other Contractors.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Construction Manager and Architect at the time and in the form specified by the Architect.

§ 3.12.11 Contractor is responsible for providing any required mock-ups required by the Contract Documents out of sequence as needed for the Project.

§ 3.12.14 The Contractor is required to provide all submittals for the Architect's review; all submittals to be provided to the Architect by the Submittal deadlines noted in the Contract Documents. The Architect's review of Contractor's submittals will be limited to the time preceding the Submittal deadline and will consist of an examination of an initial submittal and two (2) resubmittals. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals, and for evaluation of submittals for which the initial submission is received after the Submittal deadlines.

§ 3.13 Use of Site

§ 3.13.1 The Contractor shall have limited access to the site on the inside and outside of the Buildings. The Contractor shall confine operations at the site to areas designated by the Owner or Construction Manager, and permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.1.1 The Owner's Representative shall establish the limits of the construction site in addition to any contract limit lines shown on the Drawings. The Contractor shall continue his operations within these limits, unless upon written request and reply, a variance is agreed to by the Construction Manager and the Owner. The Contractor shall be responsible for trespassing on and/or damage to other property by any of his employees or his subcontractors' employees.

§ 3.13.1.2 The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents.

§ 3.13.1.3 The Contractor shall be required to perform the work of the Project with no interruption to the Owner's operations. Any work which will interfere with the Owner's operations shall be performed on evenings and weekends when the Owner's facilities are not in operation. All costs incurred by the Owner to make the facilities available during those times shall be borne by the Contractor. The Owner reserves to itself the right to determine what work will "interfere" with its operations and said determination shall be final.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site. Field personnel shall be confined to the Work area assigned.

§ 3.13.3 The Contractor shall be responsible for enforcing the Owner's security and access policies and procedures and the following rules of conduct for its personnel and those of its subcontractors, sub-subcontractors, and suppliers at the Project site, and the Owner's Project Representative shall provide interpretations should a question arise if the rules of conduct are being adequately enforced by the Contractor:

- .1 No smoking, vaping, or use of tobacco products on school grounds and within 100 feet of the boundary of any school building.
- .2 No drinking of alcoholic beverages, ingesting of anything with THC, marijuana, CBD, CBG, etc. or use of controlled substances. Any use of marijuana in any form on school grounds is strictly prohibited.
- .3 No working, or presence on site, under the influence of alcoholic beverages or controlled substances (including prescription medication).
- .4 No use of indecent, discriminatory, or vulgar language or display of indecent, discriminatory or vulgar images, publications or terms.
- .5 No use of radios or other entertainment devices.
- .6 No horseplay or dangerous behavior.
- .7 No firearms or other weapons.
- .8 No communication with staff or students.

§ 3.13.4 The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes.

§ 3.13.5 Unless otherwise specified in the Contract Documents, Contractor is responsible for its own storage and personnel trailers at the site, and Contractor will be required to supply trailers and storage as required. All costs related to delivery, construction, protection, power, etc. shall be borne by the Contractor. The placement of trailers will be strictly limited to predetermined locations. Approval of the placement of any trailer or storage box must be received from the Construction Manager and contained within the fence of the construction site.

§ 3.13.5.1 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it must be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor. The Contractor shall confine its use of the premises, for all purposes, to the areas occupied by the construction and related storage areas as and if shown.

§ 3.13.6 The Contractor shall provide all required temporary access walkways, both interior and exterior, temporary partitioning and the like necessary to complete all operations.

§ 3.13.7 The Contractor shall maintain unobstructed entrance to and/or exit from the site. All Contractor's Work areas shall be kept clean each day of refuse. Contractor shall schedule its Work so as not to interfere with any traffic to and from the required areas of use. Contractor shall be responsible for maintaining all traffic and shall provide all required barriers and protection as required to safeguard the Work and the public and the occupants of the building during Construction.

§ 3.13.8 Contractor, its Subcontractors, workers, suppliers, etc., will be held to adhere strictly to all Owner requirements and shall not occupy or carry on traffic through other parts of the site or interior of present buildings, except by specific permission from the Owner.

§ 3.13.9 The Contractor shall repair or replace any existing trees, shrubbery or other plantings damaged by operations and/or workers employed in performance of the Contract.

§ 3.13.10 During the whole course of the Work, the Contractor shall conduct its Work and operations as to interfere with traffic near the Work as little as possible and effect by every reasonable means the safety and comfort of pedestrians, vehicles and vehicle passengers near the Work.

§ 3.13.11 Employees, vehicles, equipment and material of Contractor and of all others utilized by the Contractor for

the performance of its Work shall enter onto the construction site only at those locations designated or approved by the Owner as made known by Construction Manager. Contractor arrival and departure must be prior to student/staff morning arrival or after bus dismissal.

§ 3.13.12 Contractor shall familiarize itself with all access and storage requirements and shall be subject to the same. Contractor shall properly maintain all access to Work and storage areas so that there will be continuous unimpeded access to the Work site in all seasons of the year, on all regular working days and during all regular working hours of any and all trades employed by any Contractor during Work at the site.

§ 3.13.13 Only such vehicles, trucks and equipment shall be parked or stored within the Work area as are absolutely necessary for performing the Work, for the length of time that a particular phase of Work is performed. ALL OTHER CONTRACTOR'S VEHICLES AND/OR EMPLOYEES' AND/OR WORKERS' VEHICLES, INCLUDING PASSENGER CARS, SHALL BE PARKED OFF THE SITE IN A MANNER THAT DOES NOT CREATE A NUISANCE FOR NEIGHBORING RESIDENCES.

§ 3.13.14 The Contractor and any entity for which the Contractor is responsible shall not erect any sign on the Project site without the written consent of the Owner, which may be withheld in the sole discretion of Owner.

§ 3.13.15 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the building as amended from time to time. The Contractor shall immediately notify the Owner in writing if during the performance of the Work the Contractor finds compliance with any portion of the rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project site and the Building.

§ 3.13.16 The Contractor shall provide full and free access for the Architect, Construction Manager, Owner and/or their representatives, to inspect job materials, equipment, fabrication, facilities, and storage locations, at and away from the Project site.

§ 3.13.17 SECURITY:

§ 3.13.17.1 It will be the responsibility of the Contractor to provide necessary and required security measures to adequately safeguard the construction site from vandalism and intrusion of unauthorized persons.

§ 3.13.17.2 The Contractor shall submit the means and methods of security to the Owner through the Construction Manager. The Project site must be secured 24 hours a day, seven (7) days a week, including all holidays.

§ 3.13.17.3 All workpersons and employees of Contractor are prohibited from:

- .1 Trespassing or leaving any vehicle on any property not assigned by the Owner as set aside for the use of the Contractor.
- .2 Leaving any vehicle on the grounds unless it is locked, and the ignition keys are removed.

§ 3.13.17.4 All employees or persons entering upon the property surrounding the facilities affected by the construction are restricted to the immediate area of Work. Only persons having official business will be admitted to the construction site.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner, Separate Contractors, or of other Contractors by cutting, patching, or otherwise altering

such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner, Separate Contractors, or by other Contractors except with written consent of the Construction Manager, Owner, and such other Contractors or Separate Contractors. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Separate Contractors, other Contractors, or the Owner, its consent to cutting or otherwise altering the Work.

§ 3.14.3 Only trades persons skilled and experienced in cutting and patching shall perform such work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project, and shall leave the entire area clean or its equivalent.

§ 3.15.1.1 The Contractor shall broom sweep all construction areas every day. The Construction Manager or Owner may perform an inspection each afternoon to determine that the Work areas of the Contractor have been properly cleaned.

§ 3.15.1.2 All Contractor's work areas shall be kept clean each day, of refuse, including containers, cups and the like. The facilities will remain in operation during the course of the entire construction operation. All Contractors performing work on this Contract shall schedule their work so as not to interfere with any traffic to and from the required areas of use. The Contractor shall be responsible for maintaining all traffic, and shall provide all barriers and protection as required to safeguard the work and the public and the occupants of the building during construction. The Prime Contractors shall comply with all state and local fire code regulations during construction. They include vehicular parking, smoke partitions, rescue window obstructions, use of extension cords. .

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so without notification to the Contractor and the Owner shall be entitled to reimbursement from the Contractor including reimbursement for the cost of the time of any custodial staff of Owner or cleaning contractors utilized for cleaning up.

§ 3.15.3 All debris required to be removed from the Project shall be removed in accordance with all applicable federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to such. The Contractor shall warrant that all debris shall be disposed of in accordance with all such applicable statutes, laws, codes, ordinances, regulations, rules, and lawful orders and at a facility permitted and authorized to receive materials of the type and nature so removed from the premises. To the fullest extent permitted by law, Contractor shall defend, indemnify and hold harmless the Owner, Architect and Construction Manager, from any claims, damages, losses and expenses, including, without limitation, attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder) of every kind character and nature whatsoever, arising out of or relating to Contractor's violation of this section but only to the extent caused by the negligent acts or omissions of the Contractor, any of its Subcontractors, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this section. The obligations of this section shall survive the completion of the Contract or its earlier expiration or termination.

§ 3.16 Access to Work

The Contractor shall provide the Owner, Construction Manager, and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner, Construction Manager, and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are

contained in Drawings, Specifications, or other documents prepared by the Owner, Architect, or Construction Manager. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect through the Construction Manager.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and Board of Education, officers, agents and employees of any of them from and against claims, damages, losses, liabilities, demands, causes of action, judgments and expenses, including but not limited to attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), of every kind and character that are caused by, attributable to, arising out of or resulting from, in whole or in part, from performance of the Work, provided that such claim, damage, loss, liability, demand, cause of action, judgment or expense is attributable to (i) bodily injury, sickness, disease or death, or to injury to or (ii) destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable (an "Indemnified Claims"), regardless of whether or not such indemnified claim, is caused in part by a party indemnified hereunder or whether contractual liability for indemnity or liability without fault is sought to be imposed on the Owner or any other party indemnified hereunder. Notwithstanding the preceding, it is further agreed that notwithstanding any provision to the contrary in this section or anywhere else within this Contract or otherwise in the Contract Documents, all of the defense and indemnification and hold harmless obligations herein are subject and subordinate to the limitations of any applicable laws of the State of New York and in no event shall Contractor nor any other party be required to defend or indemnify any person in violation of such applicable laws. It is further understood that in the event that a court of competent jurisdiction determines that any of the indemnification obligations hereunder are unenforceable in whole or in part, Contractor's obligation to indemnify shall be replaced with the strictest enforceable indemnification provision allowable by such laws. The Contractor's obligations hereunder shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

§ 3.18.3 The obligations contained in this Section 3.18 shall survive the completion or earlier expiration or termination of this Contract.

§ 3.19 Without limiting Section 3.18 above, the Contractor shall additionally, to the fullest extent permitted by law, indemnify and hold harmless the Owner and its board of education, Construction Manager, Architect, Construction Manager's and Architect's consultants, and, board members, officers, agents and employees of any of them from and against any and all claims, damages, losses, liabilities, demands, causes of action, judgments or expenses including but not limited to attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), of every kind and character that are caused by, attributable to, arise out of or result from or are in any way connected, in whole or in part, to Contractor's violation (or alleged violation) of any laws or regulations applicable to the Contractor's Work but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable.

§ 3.19.1 The obligations contained in this Section 3.19 shall survive the completion or earlier expiration or termination of this Contract.

ARTICLE 4 ARCHITECT AND CONSTRUCTION MANAGER

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 The Construction Manager is the person or entity retained by the Owner pursuant to Section 2.3.3 and identified as such in the Agreement.

§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Construction Manager, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 Without limiting the Architect's and/or Construction Manager's responsibilities and obligations to the Owner as set forth in their respective agreements with the Owner, the Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 For the benefit of Owner only, and not Contractor, the Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor, failure to maintain the Project Schedule or for defects and deficiencies in the Work. The Owner may seek reimbursement pursuant to the procedures set forth in these General Conditions.

§ 4.2.2.2 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager for site visits made necessary by the fault of the Contractor, failure to maintain the Project Schedule or for defects and deficiencies in the Work. The Owner may seek reimbursement pursuant to the procedures set forth in these General Conditions.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. For the benefit of the Owner only, and not the Contractor, the Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work. This shall not be deemed as any type of limitation on the Construction Manager's responsibilities and obligations to the Owner as set forth in its agreement with the Owner.

§ 4.2.4 The Construction Manager will schedule and coordinate the activities of the Contractor and other Contractors in accordance with the latest approved Project schedule.

§ 4.2.5 The Construction Manager, except to the extent required by Section 4.2.4, and Architect will not have control over, charge of, or responsibility for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents, and neither will be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. Neither the Construction Manager nor the Architect will have control over or charge of, or be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or of any other persons or entities performing portions of the Work.

§ 4.2.6 **Communications Facilitating Contract Administration.** Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Contractor shall endeavor to communicate with the Owner through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents or the architects services or professional

responsibilities. In no circumstances shall the Contractor communicate with Owner's staff other than those expressly authorized. The Owner may generally communicate with the Contractor through the Construction Manager, but there shall be no limitation on Owner's right to directly communication with Contractor. When Contractor responds to Owner following a direct communication from Owner to Contractor, Contractor shall contemporaneously provide a copy of the same communications to the Construction Manager. Contractor's communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall generally be through the Contractor, but there shall be no limitation on Construction Manager's, Owner's, and Architect's right to directly communication with Subcontractors and material suppliers as they deem necessary in their discretion. Contractor's communications by and with other Multiple Prime Contractors shall be through the Construction Manager and shall be contemporaneously provided to the Architect if those communications are about matters arising out of or related to the Contract Documents. Contractor's communications by and with the Owner's own forces shall be through the Owner.

§ 4.2.7 The Construction Manager and Architect will review and certify all Applications for Payment by the Contractor, in accordance with the provisions of Article 9.

§ 4.2.8 The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents and will notify each other about the rejection. The Construction Manager shall, for the benefit of the Owner only, determine in general whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, upon written authorization of the Owner, whether or not such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.

§ 4.2.9 Utilizing the submittal schedule provided by the Contractor, the Construction Manager shall prepare, and revise as necessary, a Project submittal schedule incorporating information from other Contractors, the Owner, Owner's consultants, Owner's Separate Contractors and vendors, governmental agencies, and participants in the Project under the management of the Construction Manager. The Project submittal schedule and any revisions shall be submitted to the Architect for approval.

§ 4.2.10 The Construction Manager will receive and promptly review for conformance with the submittal requirements of the Contract Documents, all submittals from the Contractor such as Shop Drawings, Product Data, and Samples. Where there are other Contractors, the Construction Manager will also check and coordinate the information contained within each submittal received from the Contractor and other Contractors, and transmit to the Architect those recommended for approval. By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Construction Manager represents to the Owner and Architect that the Construction Manager has reviewed and recommended them for approval. The Construction Manager's actions will be taken in accordance with the Project submittal schedule approved by the Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness while allowing sufficient time to permit adequate review by the Architect.

§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

§ 4.2.12 Review of the Contractor's submittals by the Construction Manager and Architect is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Construction Manager and Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5,

and 3.12. The Construction Manager and Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.13 The Architect will prepare Change Orders, Construction Change Directives and Allowance Change Authorizations.

§ 4.2.14 The Construction Manager and the Architect will take appropriate action on Change Orders or Construction Change Directives in accordance with Article 7, and the Architect will have authority to order minor changes in the Work as provided in Section 7.4. The Architect, in consultation with the Construction Manager, will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.15 Utilizing the documents provided by the Contractor, the Construction Manager will maintain at the site for the Owner one copy of all Contract Documents, approved Shop Drawings, Product Data, Samples, and similar required submittals, in good order and marked currently to record all changes and selections made during construction. These will be available to the Architect and the Contractor, and will be delivered to the Owner upon completion of the Project.

§ 4.2.16 The Construction Manager will assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion in conjunction with the Architect pursuant to Section 9.8; and receive and forward to the Owner written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10. The Construction Manager will forward to the Architect a final Application and Certificate for Payment or final Project Application and Project Certificate for Payment upon the Contractor's compliance with the requirements of the Contract Documents.

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of the Project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.18 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of the Construction Manager, Owner, or Contractor through the Construction Manager. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by the Contractor, and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.20 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.21 The Construction Manager will receive and review requests for information (RFIs) from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.21.1 Prior to submitting each RFI, Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources. Each RFI shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be

determined from such sources.

§ 4.2.21.3 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect for responding to Contractor requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Contractor prepared coordination Drawings, or prior Project correspondence or documentation.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site or to otherwise furnish labor, material or other services with respect to a portion of the Work, and includes, but is not limited to, Specialists, Specialty Contractor, and Trade Subcontractors.. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include Separate Contractors or the subcontractors of Separate Contractors.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site or to otherwise furnish labor, material or other services with respect to a portion of the Work. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.1.3 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Construction Manager the names of the Subcontractors or suppliers for each of the principal portions of the Work. The Contractor shall not contract with any Subcontractor or supplier to whom the Owner or Construction Manager or Architect has made reasonable written objection after receipt of the Contractor's list of Subcontractors and suppliers. The Contractor shall propose another Subcontractor to whom the Owner, Construction Manager and Architect have no reasonable objections. No increase in the Contract Sum or extension of the Contract Time shall be allowed where a Subcontractor is rejected by the Owner, Construction Manager or Architect who is deemed unqualified to perform the particular work subcontracted by the Contractor or otherwise not responsible, or having too many current projects handled by insufficient personnel.

§ 5.1.4 All Subcontractors of any tier or specialty are required to be bound by and comply with the Project Labor Agreement annexed to and made a part of these Conditions. All Subcontractors of any tier or specialty are required.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall notify in writing the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design for each principal portion of the Work. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner, Construction Manager or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner, Construction Manager or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner, Construction Manager or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner, Construction Manager or Architect makes reasonable objection to such substitution.

§ 5.2.5 The Contractor shall perform at least twenty (20%) percent of the cost of the Contract (not including the costs of materials, insurance, bonds, submittals and similar items) with its own employees.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, that the Contractor, by these Contract Documents, assumes toward the Owner, Construction Manager and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner, Construction Manager and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner pursuant to Article 14 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor in writing; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract from and after the date on which Owner determines to accept any subcontract agreement(s). All sums due and owing by Contractor to any Subcontractor(s) and/or supplier(s) for Work performed or material supplied prior to the date of Owner's election to accept assignment of such subcontract agreement(s) and/or purchase order(s) shall constitute a debt between such Subcontractor(s)/material supplier(s) and Contractor. Contractor shall deliver acknowledgment in form and substance satisfactory to Owner from each of its Subcontractors and suppliers of the contingent assignment described herein whenever requested by Owner in writing. .

(Paragraph deleted)

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction with Own Forces and to Award Other Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces which include persons or entities under separate contracts not administered by the Construction Manager, and to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner's own forces or by other Prime Contractors, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.1.1 Should the Contractor sustain any damage or delay through any act or omission of any other Contractor having a contract with the Owner for the delivery of materials, supplies, equipment, plant or appliances, or should the Contractor sustain any damage or delay through any act or omission of a Subcontractor, the Contract shall have no

claim against the Owner or their Architects for such damage or delay but shall have a right to recover or to claim damage only from the other Contractor or Subcontractor.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces including persons or entities under separate contracts not administered by the Construction Manager, the Owner shall provide that such contractors shall coordinate their work with the Work of the Contractor, who shall cooperate and coordinate with them so as to avoid delays.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner's own forces, Separate Contractors, Construction Manager and other Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of discoverable discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to defects not then reasonably discoverable.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs, including costs that are payable to a Separate Contractors or to other Contractors, because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of delays, improperly timed activities, damage to the Work or defective construction by the Owner's own forces, Separate Contractors, or other Contractors.

§ 6.2.3.1 The Contractor shall not commit or permit any act which will interfere with the performance of work by any of Owner's own forces or any Separate Contractor involved with the work (collectively referred to in this Section 6.2.3 and its subsections as "Other Contractors"). If the Contractor sustains any damage through any act or omission of Other Contractors or utilities having a contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such Other Contractor and/or utility, the Contractor shall have no claim against the Owner for such damage, but shall have a right to recover such damage from the Other Contractor and/or utility under the provision similar to the this Section 6.2.3 and its subsections which have or will be inserted in the contracts with such Other Contractors and/or utilities.

- (i) Should any Other Contractor having or who shall hereunder have a contract with the Owner for the performance of Work upon the site, sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any subcontractor of the Contractor, the Contractor agrees to reimburse such Other Contractor for all such damages and to defend at its own expense any suit based upon such claim.
- (ii) The Contractor agrees to the fullest extent permitted by law to indemnify and hold harmless the Owner, Architect and Construction Manager from all claims, causes of action, damages, losses and expense, made against or suffered by any of them arising out of Contractor's acts or omissions of the acts or omissions of any subcontractor of the Contractor.

- (iii) The Owner's right to indemnification hereunder shall in no way be diminished, waived or discharged, by the exercise of any other remedy provided for by the Contract or by law.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or Other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, and Other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, Other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may, without providing any prior written notice, clean up with its own employees or a cleaning contractor, and the Construction Manager, will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order issued by the Architect, Construction Change Directive or Field Order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order issued by the Architect, Construction Change Directive or Field Order for a minor change in the Work, issued by the Architect or Construction Manager, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Change Orders shall be submitted in total amounts for a particular change and not in installments for each trade thereafter. All partial Change Order submissions will be rejected and returned to the Contractor for completion.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Construction Manager, Architect and Contractor. A Construction Change Directive requires agreement by the Owner, Construction Manager and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work. A change in the Contract Sum or Contract Time shall be accomplished only by Change Order or Construction Change Directive. Accordingly, no course of conduct or dealings between the Parties or express or implied acceptance of alterations or additions to the Work shall be the basis of any Claim for an increase in the Contract Sum or any amounts due under the Contract Documents or an extension of the Contract Time.

§ 7.1.4 Unless otherwise agreed to in writing by the Owner and the Contractor, the combined overhead and profit that shall be included in the total cost (or credit) to the Owner for a Change in the Work shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces:
 - a. 10% on the first \$25,000 of the change order direct cost of self-performed work,
 - b. 8% on the portion of the change order direct cost of self-performed work between \$25,000 and \$50,000 and
 - c. 6% on the portion of the change order direct cost of self-performed work between \$50,000 and \$200,000 and
 - d. 5% on the portion of the change order direct cost of self-performed work greater than \$200,000.
- .2 For the Contractor, for Work performed by the Contractor's Subcontractor five percent (5%) of the amount due the Subcontractor.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, ten percent (10%) of the cost.
- .4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, five percent (5%) of the amount due the Sub-subcontractor.
- .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7

and shall be itemized (including labor costs).

§ 7.2 Change Orders

A Change Order is a written instrument prepared by the Architect and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.1 A Change Order, when issued, shall be full compensation, or credit, for the extra Work performed, omitted, or substituted. It shall show on its face, any adjustment in time for completion of the Project as a result of the Change in the Work. Each Change Order shall include all costs related thereto, including all overhead, miscellaneous expenses, and incidentals.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly. No change in Contract Time shall be allowed for Change Orders performed by Contractor, except for substantial changes in scope determined by the Owner. In the case of increased scope, it is expected that Change Order Work shall be performed by increased manpower.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If

(Paragraphs deleted)

unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager and Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be the basis for preparing a Change Order for final Owner approval

§ 7.3.7 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Owner, in consultation with the Construction Manager and Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Owner and Construction Manager may

prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, social security, old age and unemployment insurance, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Overhead and profit mark-up shall include, but not be limited to, the following:
 - .1 home office expense;
 - .2 field office expense;
 - .3 supervision;
 - .4 project management & estimation; and
 - .5 small tools & equipment.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Owner, Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. If Owner accepts such request in its sole discretion and subject to any qualifications regarding such acceptance, the Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15. To the extent Contractor does not request payment for Work completed under the Construction Change Directive in Applications for Payment (pending final determination of the total cost of a Construction Change Directive to the Owner), or to the extent Owner does not accept a Contractor request for payment for such Work, Contractor shall perform such Work without payment, subject to its rights to pursue a Claim for such as provided in and subject to Article 15 and other applicable provisions of the Contract Documents. Any refusal by the Contractor to commence or perform any disputed Construction Change Directive Work or any other disputed Work for which it Claims or requests a Change Order, as directed by Owner, shall constitute a material breach of this Contract by Contractor

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Construction Manager and Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Construction Manager shall prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.3.11 Agreement to any Change Order (whether resulting from Change Order request/Claim by Contractor or Construction Change Directive or otherwise) shall constitute a final settlement by Contractor of all matters arising out of or relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and/or the Contract Time.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing and binding on the Contractor

§ 7.5.2 Field Orders are not to be construed as Change Orders. A signed Field Order is not an approved Change Order.

§ 7.5.3 Neither the Owner, Architect nor Construction Manager shall sign field tickets, work orders or any other document prepared by the Contractor. Should the Contractor desire to record extra work performed, the Contractor may request that the work be monitored by the Construction Manager and submit a copy of the field ticket/work order immediately upon completion of such work. The Contractor may also request a copy of the Construction Manager's log.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8. Work remaining to be completed after Substantial Completion shall be limited to items which can ordinarily be completed within the period between the payment at the time of Substantial and Final payment.

§ 8.1.3.1 "Milestone Dates" are dates critical to the Owner's operations that establish when a part of the Work is to commence or be complete. All Milestone Dates, to the extent that there are any in the Project Schedule, are of the essence and shall have the same meaning as the Required Substantial Completion Date for the purpose of Liquidated Delay Damages in this Article 8. Liquidated damages applied to Substantial Completion shall apply likewise to Milestone Dates when completion requirements for such are missed and shall be incurred until the completion requirements for such Milestone Dates are actually achieved.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.1.5 The Date of Final Completion of the Work is the date all of the Work required under the Contract Documents is completed, and all applicable licenses, permits, certificates, or approvals have been obtained by the Contractor and delivered to the Owner to the extent provided for in the Owner-Contractor Agreement.

§ 8.1.6 Regular School Hours shall mean the time school is in session on any given day. Off Regular Hours shall mean all other time during the day. Regular School Days shall mean days school is in session. (See school calendar)

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work. Contractor recognizes that the Project Schedule is of critical importance to the Owner. All aspects of construction must reflect that 'TIME IS OF THE ESSENCE' to the Owner.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. Failure to prosecute the Work diligently, using such means and methods of construction consistent with the requirements of this Contract to ensure that the Work of the Project meets all Milestone Dates shall jeopardize the overall Project Schedule. This failure will mandate Contractor to increase staff, work overtime, or use other means to recover time, at the costs of Contractor. In addition, all costs due to delays in completion of the Work shall be borne by the Multiple Prime Contractor(s) responsible for delays.

§ 8.2.3.1 Contractor shall cooperate with the Owner, Architect, Engineer, Construction Manager and other Contractors on the Project, making every reasonable effort to reduce the Contract Time.

§ 8.2.4 The Contractor may request access to the site during times beyond the work hours permitted. Approval is solely at the discretion of the Owner. If approval is given, the Contractor is responsible for paying all additional costs

incurred by the Owner, Architect and Owner's Representative for providing the site to the Contractor during the additional time periods.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 Absent Contractor's breach of contract or negligence in the performance of its Work and obligations under this Contract, Contractor shall be entitled to a time extension pursuant to a Change Order signed by Owner in the amount of time determined by Owner in its reasonable discretion to be appropriate for delays caused by the following occurrences, but only if such delays are proven to Owner in its reasonable discretion to demonstrably affect the critical path of the Project Schedule as relating to the Work of this Contract: the consequences of Acts of God (such as tornado, flood, fire, hurricane, etc.); unusually adverse weather; industry-wide labor strikes or industry-wide material shortages; wars or acts of terrorism; rebellion; riot; civil disobedience; embargoes; sabotage; stop work orders issued or other action or inaction by governmental or other authorities having jurisdiction over the Project or the Work and outside the reasonable control of Contractor; the presence of hazardous materials that are not the responsibility of the Contractor nor about which Contractor does not reasonably have knowledge at the time of execution of the Contract; non-compliance of the Drawings and Specifications with laws, statutes, regulations and other legal requirements (unless otherwise the responsibility of the Contractor pursuant to the Contract Documents); changes to laws, statutes, regulations and other legal requirements after execution of this Agreement (unless otherwise the responsibility of the Contractor pursuant to the Contract Documents); actions or inactions of the Construction Manager, Architect, the other Multiple Prime Contractors, Owner's other contractors, or Owner which occur through no fault of the Construction Manager; the Construction Manager's or Architect's failure to reasonably furnish instructions or Drawings or to reasonably act on submissions through no fault of Contractor; or events outside the reasonable control of Construction Manager (for which it is not contractually responsible) which could not have been reasonably foreseen by Contractor in the development of the Project Schedule for the Work of this Contract (collectively "Contemplated Delays"). If the Contractor is delayed at any time in the commencement or progress of the Work by any Contemplated Delay, then the Contractor shall submit a Claim for an extension of the Contract Time as set forth in Section 8.3.2 and its subsections, and, for Claims not waived by Contractor by operation of Article 8 or Article 15 or other applicable provisions of the Contract Documents, the Contract Time may be extended by Change Order for such time as the Owner may determine in its sole reasonable discretion. No such Change Order extending the Contract Time, however, shall result in any increased payments to the Contractor for overhead, extended overhead, or for any other amounts of any nature whatsoever (see Section 15.1.5 and its subsections).

§ 8.3.1.1 An extension of time shall be only for the number of days of delay which the Architect may determine to be due solely to the causes set forth in the application for extension of time. The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently; but if at all, only the actual period of delay as determined by the Architect.

§ 8.3.1.2 The Contractor shall be responsible for labor peace on the Project and shall at all times exert its best efforts and judgment as an experienced contractor to adopt and implement policies and practices designed to avoid work stoppages, slowdowns, disputes, or strikes where reasonably possible and practical under the circumstances and shall, at all times, maintain Project wide labor harmony. The Contractor shall be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes except as specifically provided for elsewhere in these Conditions.

§ 8.3.1.3 All costs for expedited material procurement to meet the schedule shall be the responsibility of the Contractor.

§ 8.3.2 Time Limits and other Requirements for Contractor's Notice of Claims for Extension of Contract Time for Contemplated Delay. Notwithstanding anything contained elsewhere in the Contract Documents to the contrary, it is a condition precedent to Contractor's ability to pursue any Claim for extension of Contract Time that the Claim must be initiated by written notice by Contractor to the Owner with a copy sent to the Construction Manager and Architect in strict compliance with the requirements of this Section 8.3.2 (and its subsections). So that the Owner can properly investigate the Claim, TIME IS EXPRESSLY OF THE ESSENCE WITH RESPECT TO CONTRACTOR'S GIVING OF NOTICE OF CLAIM TO OWNER WITH THE INFORMATION AS PROVIDED HEREIN AS A CONDITION PRECEDENT TO ITS ABILITY TO ASSERT OR OTHERWISE PURSUE ANY CLAIM FOR EXTENSION OF THE CONTRACT TIME.

§ 8.3.2.1 Any Claim for Contract Time extension relating to an Contemplated Delay shall be made by Contractor to

Owner in writing, with a copy sent to the Construction Manager and Architect, within seven (7) days after Contractor knew or should have known of the cause of the delay and its impact to the critical path item affected; with such written notice advising Owner of the existence, nature and effect of such condition, occurrence, or event upon the approved Project Schedule as relating to Contractor's Work, and must state why and in what respects, if any, the condition is causing or may cause a delay along with demonstrable proof of the alleged impact on the critical path of the approved Project Schedule as relating to Contractor's Work. Contractor's Claim shall suggest strategies to Owner to mitigate the effect of any such delay including without limitation overtime, re-sequencing and other remedial methods.

§ 8.3.2.2 No Claim for extension of the Contract Time due to weather conditions will be considered unless accompanied by documentary evidence showing that such weather is unusually severe and abnormal for the past 50 years and could not have been reasonably anticipated (or reasonably protected against), and unless the weather conditions had an adverse effect on the critical path of the Project Schedule as relating to Contractor's Work.

§ 8.3.2.3 Failure of the Owner to respond in writing within thirty (30) days following delivery of Contractor's written notice required by this Section 8.3.2 and its subsections shall be deemed a rejection of the Claim.

§ 8.3.2.4 Failure of the Contractor to strictly comply with the requirements of Section 8.3.2 (and its subsections) shall be deemed a conclusive waiver by the Contractor of any and all Claims for damages for delay and/or extension of the Contract Time regarding delay arising from such conditions, occurrences or events.

§ 8.3.2.5 The determination of the Owner regarding any Claim for an extension of Contract Time by notice of delay as provided herein shall be binding and conclusive on the Contractor.

§ 8.3.2.6 Permitting the Contractor to continue with the Work after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the Contractor after such time, shall in no way operate as a waiver on the part of the Owner of any of its rights under this Contract.

§ 8.3.2.7 When the Contract Time has been extended, as provided under this Section 8.3, such extension of time shall not be considered as justifying extra compensation to the Contractor for administrative costs of other similar reasons.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

§ 8.3.4 In no event shall the Contractor be entitled to damages for delay under the Contract (see Section 15.1.5 and its subsections).

§ 8.3.5 To the extent the Contractor is required to work during overtime hours, weekends, holidays or at other times which are not regularly scheduled, due to the fault of the Contractor, or where Contractor requests to work during these periods to facilitate its schedule, the Contractor shall be responsible for the costs incurred by the Owner, the Construction Manager, the Architect and/or others attributable to working during periods which have not been ordinarily scheduled.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for Payment ("Schedule of Values"), allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. The Schedule of Values submitted by Contractor will be adjusted as required by Construction Manager or Architect as necessary for their approval. This schedule, once approved by the Construction Manager or Architect, shall be used as

a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The Schedule of Values shall be provided on the AIA G702 form and no payments will be made to Contractor until such billing breakdown and initial submissions are approved.

§ 9.3 Applications for Payment

§ 9.3.1 On a monthly basis, , the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the Schedule of Values for completed portions of the Work in compliance with all requirements of Article 5 of the Agreement and elsewhere in the Contract Documents. Such application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and material suppliers and shall reflect retainage if provided for in the Contract Documents. Each item listed in the Application for Payment shall have a separate amount for labor and a separate amount for material and other costs. The form of Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G7032, Application and Certificate for Payment. Alternative payment application forms are not permitted. AIA Document G732 shall be supported by a current authorized edition of AIA Document G703, Continuation Sheet.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 Until Substantial Completion, the Owner shall pay 95 percent of the amount due the Contractor on account of progress payments minus monies withheld for any duly filed liens against said Contractor. At Substantial Completion, the Construction Manager and Architect may authorize remaining partial payments to be made in full, less twice the value of items remaining to be completed (punchlist) and an amount necessary to satisfy any outstanding claims, liens, or judgments.

§ 9.3.1.4 Applications for Payment must be accompanied by any and all releases of liens for previous applications from Contractor and their subcontractors and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums. As-built drawings showing all Work up to the time of the Request for Payment shall be a prerequisite for making payment.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. Such payment by the Owner for materials, equipment, fixtures and supplies stored on or off the Site shall not relieve the Contractor of its responsibility to provide reasonable protection of said materials, equipment, fixtures and supplies until their incorporation into the Work. Any theft, damage or other form of loss shall be remedied solely by the Contractor at their expense.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.3.3.1 The Contractor shall save and keep the Owner and the Owner's property free from all liens and claims, legal or equitable, arising out of Contractor's work hereunder. In the event any such lien is filed by anyone claiming by, through or under the Contractor, the Contractor shall remove and discharge same within ten (10) days of the filing

thereof. The Contractor further expressly undertakes to defend the Indemnitees at the Contractor's sole expense against any actions, lawsuits or proceedings brought against Indemnitees as a result of liens filed against the Work, the site of any of the Work, the Project site and any improvements thereon, payments due the Contractor or any portion of the property of any of the Indemnitees referred to collectively as liens in this Section 9.3.3.1. The Contractor hereby agrees to indemnify and hold Indemnitees harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits or proceedings.

§ 9.3.3.2 The Owner shall release any payments withheld due to a lien or claim of lien if the Contractor obtains security acceptable to the Owner or a lien bond which is: (1) issued by a surety acceptable to the Owner, (2) in form and substance satisfactory to the Owner, and (3) in an amount not less than One Hundred Fifty percent (150%) of such lien claim. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under this Section 9.3, including, without limitation, the duty to defend and indemnify the Indemnitees. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.3.3 Notwithstanding the foregoing, the Owner reserves the right to settle any disputed mechanic's or material men's lien claim by payments to the lien claimant or by such other means as the Owner, in the Owner's sole discretion, determines is the most economical or advantageous method of settling the dispute. The Contractor shall promptly reimburse the Owner, upon demand, for any payments to be made other than those made from the retainage under the Owner-Contractor Contract.

§ 9.3.4 In connection with all progress payments, the Contractor shall submit releases/waivers of lien with respect to all Work previously performed and for which payments were made under a preceding application. Beginning with the second payment requisition and with each subsequent payment requisition, Contractor shall furnish to Owner, without limitation, the following documents:

- a. Labor and/or Materials Affidavit
- b. Daily and Weekly Wage Affidavit;
- c. Contractor's Partial Release and Waiver of Lien
- d. Written Certified Payroll information in compliance with applicable laws; and
- e. Additional information required by the Construction Manager Owner and/or any applicable laws, codes, rules and or regulations applicable to the Work of the Contractor.

§ 9.3.5 The Contractor shall submit a "pencil-copy" requisition to the Construction Manager no later than the date as directed by the Construction Manager for work completed up to that day for review with field personnel and for comparison to the Contractor's as-built drawings which shall be updated daily per the General Conditions. After any adjustments are made, the Contractor shall finalize and submit to the Construction Manager no later than the date as directed by the Construction Manager five (5) copies of the requisition, signed and notarized, for the Construction Manager's final approval and signature. The Owner shall make payment within thirty (30) days from the date of the Construction Manager's final approval and signature.

§ 9.4 Certificates for Payment

§ 9.4.1 Pursuant to the procedures and timelines set forth in Article 5 of the Agreement and elsewhere in the Contract Documents, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 The Construction Manager's certification of an Application for Payment shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge,

information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

(Paragraph deleted)

§ 9.4.3 The Architect's issuance of a Certificate for Payment shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.5 The issuance of a Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

(Paragraph deleted)

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.2 and 9.4.3 cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor or other Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; .7 any failure to carry out the Work in accordance with the Contract Documents;
- .8 violations of law applicable to the Work which are the responsibility of Contractor;
- .9 erroneous estimates of the percentage of Work performed;
- .10 Contractor's failure to give notice of errors and inconsistencies;
- .11 failure of Contractor to comply with mandatory requirements for maintaining record drawings (*NOTE* - Contractor may be required to check record drawings each month. Written confirmation that the record drawings are "up-to-date" may be required by the Architect before approval of the Contractor's monthly Application for Payment will be considered); or
- .12 any other reasonable grounds for objection or withholding as provided in the agreement or as permitted by law.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld. The Owner shall not be deemed in default by reason of withholding payment while any conditions described in 9.5.1 remain.

§ 9.5.3 If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.5.4 If the Contractor disputes any determination by the Construction Manager or Architect with regard to any Certificate of Payment, the Contractor nevertheless shall expeditiously continue to prosecute the Work.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents and shall so notify the Construction Manager and Architect. No partial payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or relieve the Contractor of any of its obligations hereunder with respect thereto.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. Notwithstanding anything in the Contract to the contrary, the Contractor shall pay each Subcontractor or materialman as required by New York General Municipal Law Section 106(b), for work performed by the Subcontractor or materialman under this Contract. The Contractor shall include in each of its Subcontracts a provision requiring each Subcontractor to make payment to each of its subcontractors or suppliers for Work performed under this Contract in the same manner and within the same time period as set forth herein.

§ 9.6.3 The Construction Manager may, on written request by a Subcontractor to the Owner, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right, but no obligation, to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and material and equipment suppliers' amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any

tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within ten days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect and such certified amount is not otherwise appropriately withheld by Owner pursuant to operation any of the terms and conditions of the Contract Documents or awarded by binding dispute resolution, then the Contractor may, upon seven additional business days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the appropriate amount owing has been received. The Contract Time shall be extended appropriately as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents such that the Work shall have been completed and all systems included in the Work shall be operational in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. use to the reasonable exclusion of Contractor with only "Punch-List" or minor items remaining which can be corrected or completed without any material interference with Owner's use of the Work. It is a condition precedent to Substantial Completion that the Owner has received all Certificates of Occupancy and any permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the beneficial occupancy of the Project.

(Paragraph deleted)

§ 9.8.1.1 When advised by the Contractor that the Work is substantially completed, the Architect and the Contractor shall, within a reasonable time, make a joint inspection of the work and if the Architect shall determine the Work is substantially completed, the Contractor shall submit a substantial completion application.

§ 9.8.1.2 Notifications by the Contractor to the Architect for inspections to confirm Substantial Completion as parts and/or as a whole shall be judiciously made and without abusing said process.

§ 9.8.2 No later than 14 days prior to the Contract-scheduled date of Substantial Completion, the Contractor shall issue a letter to the Architect and Construction Manager confirming their work is on schedule for Substantial Completion by the contract specified date. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absent the contractor letter confirming readiness of work, the Architect may elect to postpone the substantial completion inspection. If the Architect's inspection discloses any item which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine the actual date of Substantial Completion.

§ 9.8.2.1 The Architect will perform no more than one inspection to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. If the Architect and/or Construction Manager are required to perform multiple inspections because the Work fails to comply with the Contract Documents, the amount of compensation paid to the Architect or Construction Manager by Owner for additional services shall be reimbursed by Contractor to Owner and may at Owner's discretion be deducted from payments (or final payment) otherwise payable to Contractor, if available.

§ 9.8.3 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the

Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.4 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.8.5 For any uncompleted work at the time of Substantial Completion, the Owner will retain the monetized value of the remaining work, i.e. "punch list", times 200 percent as determined by the Construction Manager, in addition to any duly filed and unresolved liens against the Contractor as per Section 106-b of the N.Y.S. General Municipal Law, which will be released upon notification by the Contractor to the Construction Manager that the Work has been completed to the Architect's satisfaction.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Construction Manager, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, any partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents nor does it waive the Owner's right to liquidated damages. Further such occupancy does not relieve the Contractor from completing the Work within the time period specified.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 On or within seven (7) days following the date of Final Completion (as established in the bid documents or modified by Change Order) the Architect will conduct a final inspection of the work. As a result of that inspection, the Architect will evaluate the work and will issue a Final Inspection Report. This report will document the condition of the Work and will render a formal opinion as to the whether or not the Work or designated portion is complete. If, as a result of the Architect's inspection, it is determined that the Work is not complete and in accordance with the Contract Documents, the Architect shall notify the Owner and Contractor in writing of this opinion. This notice will include the Final Inspection Report documenting the conditions of the work and will be considered a formal notice to the Contractor of their failure to fulfill the terms and conditions of their Contract.

If as a result of this inspection, it is determined that the Work is complete, the Contractor shall submit their Final Payment Application and Certificate for Payment. The Architect will then certify and issue the final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's periodic site visits and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for payment will constitute a further representation that the conditions listed in section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued until all work on the final inspection report is completed or corrected.

§ 9.10.1.1 The Architect will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. If the Architect

is required to perform multiple inspections or on-site observations because the Work fails to comply with the Contract Documents, the amount of compensation paid to the Architect by Owner for additional services shall be reimbursed by Contractor to Owner and may at Owner's discretion be deducted from payments (or final payment) otherwise payable to Contractor, if available.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect through the Construction Manager (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.2.1 Additionally, all warranties and guarantees required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Construction Manager prior to submission of a final Application for Payment. The Construction Manager and Architect shall additionally not issue the Final Certificate for Payment until the all warranties and guarantees have been received, accepted and approved and until the following have occurred:

- .1 the Owner has received the final certificate of occupancy for the Project or that portion of the Project which encompasses the Work of the Contractor, if relevant;
- .2 the Project or that portion of the Project which encompasses the Work of the Contractor has been completed and accepted, and;
- .3 all procedures regarding final payment have been completed and the Owner has received state agency approval (if required) to make final payment, and otherwise all approvals and/or sign-offs have been obtained from any authorities having jurisdiction over the Work or the Project which are required with respect to the Work of this Contract.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Construction Manager and Architect so confirm, the Owner shall, upon application by the Contractor and certification by the Construction Manager and Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect through the Construction Manager prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a materials supplier, shall constitute a waiver of claims by that payee..

§ 9.10.6 If the Contractor is responsible for delays in the final completion and closeout beyond the contract specified time, the Owner is entitled to reimbursement from the Contractor for amounts paid by the Owner to subsequently extend the Electronic Submittal System (Submittal Exchange) or, the Owner may, in its discretion deduct such amount from payments (or final payment) otherwise payable to Contractor, if available. .

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Contractor shall be responsible for maintaining safety data sheets at the site. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.1.1 Contractor shall submit its site safety and corporate safety policy/program to the Construction Manager in no event later than within two (2) weeks following issuance of a Notice to Proceed or commencement of Work, whichever is earlier. The safety policy/program shall be in conformance with and meet or exceed OSHA standards and other applicable federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities. The safety policy/program shall also include provisions requiring Subcontractors to participate in safety training to acquaint such Subcontractors with the provisions of the Regulations of the Commissioner of Education (Section 155.5) and shall set forth how the Contractor plans to maintain a safe work environment.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor;
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction; and
- .4 construction or operations by the Owner, Separate Contractors, or other Contractors.

Prior to commencement of the Work, the Contractor shall document existing conditions, record existing damage to construction or property at the site to remain and notify the Construction Manager and Architect of the same in writing.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.2.1 The Contractor agrees in working on the Owner's premises to comply with all applicable codes and safety regulations as they apply to the Work and as set forth in the Occupational Safety and Health Act of 1970 (OSHA), as revised to date.

§ 10.2.2.2 Additional Requirements:

- .1 Ladders and scaffolding shall be in good operating condition. Any damaged ladders, bakers, and rolling scaffolding shall be immediately removed from the job.
- .2 Ground properly all electric operated tools.
- .3 Wear protective eye goggles during any cutting, whether by hand or mechanical means.
- .4 Remove nails, screws, bolts and tack strips from floor immediately after demolition.
- .5 Workpersons to have proper shoes and clothing as per OSHA recommendation.

§ 10.2.2.3 During any pandemic, epidemic and any declaration of emergency as a result thereof, the Contractor shall ensure that its employees are provided with and use face masks, exercise social distancing at the workplace and follow any other safety requirements required by federal and state law.

§ 10.2.2.4 The Contractor agrees, in order that the work will be completed with the greatest degree of safety: To conform to the requirements of the OSHA as amended and the Construction Safety Act of 1969 as amended, including all standards and regulations that have been since or shall be promulgated by the governmental authorities which administer such acts, and shall hold harmless the Owner, Owner's Representative, the Construction Manager, the Architect, and all their employees, consultants and representatives, from any and all claims, damages, losses, suits obligations, fines, penalties, costs, charges and expenses which may be imposed upon or incurred by or asserted against any of them by reason of any act or omission of such Contractor or any Subcontractor or any person or firm directly or indirectly employed by such Contractor, with respect to violations of OSHA requirements, rules and/or regulations.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel, and give the Owner reasonable advance notice, and shall maintain on the site, a full set of safety instructions relating to all such materials.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2, 10.2.1.3 and 10.2.1.4. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner, Construction Manager or Architect or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner, Construction Manager and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If Contractor or any Subcontractor (or any employee or anyone for whom either of them are legally responsible) suffers injury or damage to person or property, written notice of the injury or damage, whether or not insured, shall be given to the Owner and Construction Manager within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the Owner and Construction Manager to investigate the matter.

§ 10.2.9 The Contractor shall promptly report, in writing, to the Owner, Construction Manager and Architect all accidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages re caused, the accident shall be reported immediately by telephone or messenger to the Owner and the Construction Manager.

§ 10.2.10 The Contractor solely assumes the following distinct and several risks whether said risks arise from acts or omissions, whether supervisory or otherwise, of the Owner, of the Construction Manager, of third persons or from any other cause, including unforeseen obstacles and difficulties which may be encountered in the prosecution of the Work, whether said risks are within or beyond the control of the Contractor and whether said risks involve any legal duty, primary or otherwise, imposed upon the Owner or Construction Manager, excepting only risks which arise from faulty designs as shown by the Plans and Specifications or from affirmative acts of the Owner or the Owner's members, officers, representatives or employees committed with intent to cause the loss, damage or injuries hereinafter set forth:

- .1 The risk of loss or damage, includes direct or indirect damage or loss, of whatever nature to the Work or to any plant, equipment, tools, materials or property furnished, used, installed or received by the Owner, the Construction Manager, the Contractor or any Subcontractor, materialmen or workperson performing services or furnishing materials for the Work. The Contractor shall bear said risk of loss or damage until Final Acceptance of the Work by the Owner or until completion or removal of said plant, equipment, tools, materials or property from the Site and the vicinity thereof, whichever event occurs last. In the event of said loss or damage, the Contractor immediately shall repair, replace or make good any said loss or damage.
- .2 The risk of claims, just or unjust, by third persons against the Contractor or the Owner, the Architect and the Construction Manager on account of wrongful death, bodily injuries and property damage, direct or consequential, loss or damage of any kind whatsoever arising or alleged to arise out of or as a result of or in connection with the performance by the Contractor of the Work, whether actually caused by or resulting from the performance of the Work, or out of or in connection with the Contractor's operations or presence at or in the vicinity of the Site. The Contractor shall bear the risk for all deaths, injuries, damages or losses sustained or alleged to have been sustained prior to the Final Acceptance of the Work. The Contractor shall bear the risk for all deaths, injuries, damages or losses sustained or alleged to have been sustained resulting from the Contractor's negligence or alleged negligence which is discovered, appears, or is manifested after acceptance by the Owner.

§ 10.2.11 Title to all completed or partially completed work at the job site, and to all materials delivered to and stored at said job site which are intended to become a part of the complete work covered by the Contract, shall be in the name of the Owner. Notwithstanding the foregoing, and prior to acceptance of the complete work by the Owner, the Contractor shall be liable for all loss of or damage to said completed work, partially completed work, materials furnished by the Contractor, and materials or equipment, furnished by others, the custody of which has been given to the Contractor, arising from any cause other than those against which the Owner herein undertakes to carry insurance. In the event of loss or damage from causes other than those against which the Owner undertakes to carry insurance, the Contractor shall replace or repair the said work or materials at their own cost and expense. In the event there is a deductible in Owner's insurance, the Contractor shall pay any such deductible.

§ 10.2.12 If the Contractor shall sustain any loss or damage arising from the nature of the work to be done under this Contract or from any unforeseen or unusual obstructions or difficulties which may be encountered in prosecuting the work or from the actions of the elements including water, wind and frost, the Contractor shall maintain suitable adequate safeguards to protect all property and personnel, public or private.

§ 10.2.13 The Contractor's obligations under this Article shall not be deemed waived, limited or discharge by the enumeration or procurement of any insurance for liability for damages. The Contractor shall notify its insurance carrier within twenty-four (24) hours after receiving a notice of loss or damage or claim from the Owner or Construction Manager. The Contractor shall make a claim on its insurer specially under the provisions of the contractual liability overages and any other overages afforded the Owner or the Construction Manager including those of being an additional insured where applicable.

§ 10.3 Hazardous Materials

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition in writing.

§ 10.3.2 Upon receipt of the Contractor's written notice regarding hazardous materials or substances not addressed in the Contract Documents, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to reasonable attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact of hazardous materials or substances not addressed in the Contract Documents if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site. The Contractor shall be responsible for hazardous materials or substances required by the Contract Documents, to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 To the fullest extent permitted by law, the Contractor shall indemnify the Owner from and against claims, damages, losses, costs and expenses, including but not limited to, reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), the Owner incurs arising out of or resulting from (1) remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except, in both instances, to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without fault or negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred..

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

§ 10.5 Miscellaneous

§ 10.5.1 Smoking (including e-cigarettes and vaping) and other tobacco use, alcoholic beverages and controlled substances are expressly prohibited on all District properties. Smoking (including e-cigarettes and vaping) is also prohibited within 100 feet of the boundary of the property of any elementary or secondary school. Reporting to work impaired or under the influence of or being at work impaired by alcohol or controlled substances is strictly prohibited. The Contractor bears the responsibility of determining if its, or its Subcontractor's employees are impaired which would jeopardize the safety of the public, the employees of other Contractors and their Subcontractors, the Owner, Architect and Construction Manager.

§ 10.5.2 All persons representing Contractors, Subcontractors or suppliers shall wear shirts, long pants and other proper attire while on District property. All persons representing Contractors, Subcontractors or suppliers shall conduct themselves in a manner consistent with the rules and policies of the Owner/School District while on District property or otherwise representing this Project. All Contractors, Subcontractors, suppliers and their employees are prohibited from conversing with school personnel and students. Any construction employees found doing so will be removed from the site. NO COMMUNICATION BETWEEN WORKERS AND STUDENTS WILL BE TOLERATED. All Contractors, Subcontractors, suppliers, and their employees must not use indecent language, profanity, obscene language, discriminatory or harassing language and anyone doing so will be removed from the site. Artwork and decoration found on vehicles belonging to Contractor's or Subcontractor's employees parked on or near the school property which contain indecent language, or pictures or symbols that foreseeably could cause a disruption to the educational environment, shall either be covered or removed from the location. The use of radios, tape players, CD players and the like is prohibited within the Project site

§ 10.5.3 Identification Badges: Contractor will provide each of their field personnel and workpersons with an identification badge in accordance with Construction Manager's or Owner's instructions, upon beginning Work on

site. All workpersons shall display the badge at all times on site. Failure to wear identification badge at all times will result in the immediate removal of the individual from the jobsite

§ 10.5.4 All crane picks, materials delivery, etc. must be coordinated so as not to lift over any occupied area of the building. If necessary, this work shall be done on off hours to ensure the safety of the building occupants. Crane location must be carefully chosen to ensure the safety of building occupants. Also, Contractor must provide all engineering for crane sizing and sub-base platforms if necessary.

§ 10.5.5 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause. Further, Contractor, in connection with its performance of the Work or otherwise, shall not interfere in any manner with the operation of any business adjacent to the Project site including, without implied limitation, any interference with traffic, access or egress, parking and cleanliness. The Contractor shall protect and cause its Subcontractors to protect all work from damage in the event of temporary suspension of the Work.

§ 10.5.6 The Contractor shall take all necessary precautions to insure against fire during construction and be responsible to ensure that the area within Contract limits is kept orderly, safe, and clean and that combustible rubbish shall be stored on the site in such a manner and at such locations as designated by Owner to:

- (i) provide and maintain adequate fire protection. The fire protection shall be adequate at all times, and shall be subject to applicable codes and regulations.
- (ii) Comply with regulations, OSHA standards, and codes of local Fire Marshall, agencies, and departments having jurisdictions.

§ 10.5.7 The Contractor shall be required to keep fire alarm operational at all times or provide fire watch approved by the local Fire Marshall.

§ 10.5.8 The Contractor shall at all times provide the proper housekeeping to minimize potential fire hazards and shall provide approved spark arresters on all steam engines, internal combustion engines and flues.

§ 10.5.9 No fires shall be built on the premises nor shall open flame devices of any kind be employed within the building except for field welding with supervised fire watch.

§ 10.5.10 Free access to fire hydrants and standpipe connections shall be maintained at all times during construction operations, and portable fire extinguishers shall be provided by the Contractor and made conveniently available throughout the construction site. The Contractor shall notify its employees and subcontractors of the location of the nearest fire alarm box at all locations where the work is in progress.

§ 10.5.11 From the commencement to the completion of the Project, the Contractor shall keep the parts of the work and the buildings free from accumulation of water no matter what the source or cause of water.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall obtain, pay for and keep in full force and effect during the entire term of this Contract, and during the performance, final completion and acceptance of any Work, and after the term of this Contract (as may be specified herein) insurance, in a company or companies lawfully licensed to do business in the State of New York, as designated by this Article 11 and any other insurance required by applicable law, regulations, or orders of state, municipality or other entity having jurisdiction over the Work or the Project. Contractor shall not take any action, or omit to take any action that would suspend or invalidate any of the required coverages during the time period such coverages are required to be in effect.

§ 11.1.1.1 Workers' Compensation. and any other federal and/or state coverages as appropriate, including but not limited to: Occupational Disease Benefits, Voluntary Compensation, and Disability Benefits, for not less than the statutory requirements, and if applicable an "Other States Endorsement"; and

Employer's Liability Insurance with limits not less than the statutory requirements or \$1,000,000 (each accident), \$1,000,000 (disease policy limit), and \$1,000,000 (disease, each employee), whichever is greater. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable.

§ 11.1.1.2 Commercial General Liability Insurance is to be provided under the Insurance Service Office's (ISO) most current form, on a project specific basis, with limits not less than the following required limits:

Each Occurrence:	\$1,000,000
General Aggregate (per project):	\$2,000,000
Products and Completed/Operations:	\$2,000,000
Personal & Advertising Injury:	\$1,000,000
Fire Damage (any one fire):	\$ 100,000
Medical Expense (any one person):	\$ 10,000

Such insurance shall include the following coverages:

- (i) claims for damages because of bodily injury, occupational sickness or disease, or death;
- (ii) claims for damages insured by usual personal injury liability coverage;
- (iii) claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- (iv) premises operations;
- (v) product liability and completed operations, and the policy shall specifically include coverage for two (2) years of extended completed operations coverage, which will commence immediately following the expiration date of the Commercial General Liability policy;
- (vi) owner's protective;
- (vii) contractors protective;
- (viii) contractual liability covering liabilities assumed under the Contract (including the tort liability of another assumed in a contract), and including, coverage for claims arising out of construction or demolition operations when working within 50 feet of railroad track;
- (ix) personal injury and advertising injury liability;
- (x) extended bodily injury coverage with respect to bodily injury resulting from the use of reasonable force to protect persons or property;
- (xi) medical payments coverage;
- (xii) broad form property damage liability coverage, including coverage for completed operations;
- (xiii) explosion, collapse, and underground property damage (XCU);
- (xiv) construction means and methods;
- (xv) independent contractors;
- (xvi) Owner and others' identified herein as additional insured to be specifically evidenced as additional insureds via ISO Endorsements GC 2010 and CG 2037.

§11.1.1.3 Comprehensive Auto Liability Insurance, including uninsured/underinsured and medical payment protection, and including all owned, non-owned and hired autos, with a limit of liability of not less than \$1,000,000 each occurrence (combined single limit for personal injury, including bodily injury or death, and property damage).

§11.1.1.4 Umbrella/Excess Policy, providing excess coverage in excess of the limits for the insurance coverages required by Sections 11.1.1.1, 11.1.1.2, and 11.1.1.3 above, with such excess/umbrella coverage being at least as broad as each and every one of the underlying policies), with the provision that coverage shall extend for a period of at least two (2) years from the date of final completion and acceptance by Owner of all Work; with a minimum limit not less than \$5,000,000 per occurrence/annual general aggregate. In the event the underlying policies have different renewal dates, the Contractor shall ensure that the underlying policies are maintained for the term specified in this

Contract.

§ 11.1.2 All insurance shall be written on an occurrence basis. A copy of the additional insured endorsement shall be attached.

§ 11.1.3 Contractor's insurance requirements shall be provided by an insurance carrier licensed to do business in the State of New York and have an A.M. Best Rating of A- or better as determined in the most recent A.M. Best Publication, or as may otherwise be agreed by Owner.

§ 11.1.4 Insurance coverage to be provided by the Contractor shall state that the Contractor's coverage shall be primary and non-contributing to any insurances (or self-insurance), including any deductible, maintained by, or provided to Owner or the other Additional Insureds; and shall contain a Waiver of Subrogation in favor of Owner and the other Additional Insureds, so that in no event shall the insurance carriers have any right of recovery against the Owner, the other Additional Insureds, or the agents or employees or either of them; and shall contain a separation of insured provision (severability of interest clause). If the Owner or another Additional Insured has other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis.

§ 11.1.5 In the event that any of the insurance coverage to be provided by the Contractor contains a deductible or self-insured retention, the Contractor shall indemnify and hold the Owner, and any Additional Insured harmless from the payment of such deductible, which deductible shall in all circumstances remain the sole obligation and expense of the Contractor.

§ 11.1.6 The Contractor shall require all Subcontractors to carry the same insurance coverages and limits of liability as set forth herein and adjusted to the nature of Subcontractors' operations and submit same to the Owner through the Construction Manager for approval prior to start of any Work. In the event Contractor fails to obtain the required certificates of insurance from Subcontractor and prove them to Construction Manager and a claim is made or suffered, the Contractor shall, to the fullest extent permitted by law, indemnify, defend, and hold harmless the Owner and the Additional Insureds from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract Documents and shall survive the term or earlier termination of the Contract.

§ 11.1.7 Environmental Impairment Liability (Pollution Insurance) (EIL): All Contractors and Subcontractors involved with the removal and/or abatement of pollutants (including but not limited to asbestos abatement contractors, lead abatement contractors, roofing contractors, tank removal contractors) are required to maintain a minimum of \$2,000,000 EIL coverage. Owner and all other parties required by this Contract to be Additional Insureds and all others identified by Owner as such, shall be included as Additional Insured son any EIL policy on a primary and non-contributing basis.

§ 11.1.8 The Contractor assumes responsibility for all injury or destruction of the Contractor's and Subcontractors' materials, tools, machinery, equipment, appliances, shoring, scaffolding, and personal property of Contractor's and Subcontractors' employees from whatever cause arises. Any policy of insurance secured covering the Contractor's or Subcontractors' property leased or hired by them and any policy of insurance covering the Contractor or Subcontractors against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

§ 11.1.9 Additional Insured/Certificate Holder. The Contractor shall cause the commercial liability and other coverage required by the Contract to include the following as Additional Insureds:

- (i) Lakeland Central School District;
- (ii) Members of the Board of Education, officers and employees, of the Lakeland Central School District;
- (iii) The Construction Manager
- (iv) The Architect ; and

Contractor shall also add any other entities and/or individuals as may be required by Owner as Additional Insured.

The certificate holder shall be Lakeland Central School District unless Owner requires otherwise.

Contractor shall provide an Additional Insured endorsement that expressly names each of the above identified Additional Insureds (non-blanket) and shall ensure that the endorsement does not include language that requires an Additional Insured to have a written contract with the named insured for coverage to apply.

Additional insured status shall be provided by standard or other endorsements that extend coverage to the District for ongoing operations (CG 20 38) and products and completed operations (CG 20 37). The decision to accept an endorsement rest solely with the District. A completed copy of the endorsements must be attached to the Certificate of Insurance

§ 11.1.10 Certificates of insurance acceptable to the Construction Manager and Owner shall be provided to the Construction Manager and filed with the Owner prior to commencement of the Work. A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/15) must be included with the certificates of insurance. The certificates and the insurance policies shall contain a provision that coverages afforded under the policies will not be allowed to be materially changed or canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Owner via Certified/Registered Mail. If any of the foregoing insurance coverages are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

§ 11.1.11 The Contractor acknowledges that its failure to obtain or keep current the required insurance coverage shall constitute a material breach of contract and subjects the Contractor to liability for damages the Owner (or others, including without limitation the other Additional Insured) sustains as a result of such breach. In addition, the Contractor shall be responsible to the fullest extent permitted by law for the indemnification to the Owner and all Additional Insured of any and all costs associated with such lapse in coverage, including but not limited to reasonable attorneys' fees (and this indemnification obligation shall survive the term or earlier termination of the Contract).

§ 11.1.12 The amount of insurance required by the Contract shall not be construed to be a limitation of the liability of on the part of the Contractor or any of its Subcontractors.

§ 11.1.13 No act or omission of any insurance agent, broker, or insurance company representative shall relieve Contractor of any of its obligations under this Contract.

§ 11.1.14 Notwithstanding anything in Section 11.3 and its subsections to the contrary, the Contractor shall provide insurance coverage for portions of the Work stored off the site, in transit, and stored on the site but not incorporated into the Work on a full replacement cost basis. The Contractor is responsible for all deductible amounts.

§ 11.1.15 Subcontractors are subject to the same insurance terms and conditions as stated herein, in Article 11, for Contractors and must submit proof of same to the Contractor, prior to start of any work. The Owner delegates its responsibility with respect to ensuring that each and every Subcontractor of Contractor complies with the insurance requirements and the Contractor is solely responsible if any Subcontractor does not comply with these requirements.

§ 11.1.16 In the event the Contractor fails to obtain the required certificates of insurance from the Subcontractor and a claim is made or suffered, the Contractor shall indemnify, defend and hold harmless the Owner, its officers, employees and agents, from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract Documents, and shall survive the term or earlier termination of the Contract.

§ 11.1.17 The Contractor assumes responsibility for all injury or destruction of the Contractor's and Subcontractors' materials, tools, machinery, equipment, appliances, shoring, scaffolding, and personal property of Contractor's and Subcontractors' employees from whatever cause arises. Any policy of insurance secured covering the Contractor's or

Subcontractors' property leased or hired by them and any policy of insurance covering the Contractor or Subcontractors against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

§ 11.2 Owner's Insurance

§ 11.2.1 Liability Insurance. The Owner shall purchase and maintain the Owner's usual liability insurance.

§ 11.2.2 Property Insurance. The Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in New York State, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in the Contract Documents or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.2 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.2.2.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for the Architect's, Contractor's, and Construction Manager's services and expenses required as a result of such insured loss.

§ 11.2.2.2 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles, unless the underlying loss is caused in whole or in part by Contractor or any of its Subcontractors or anyone for whom either of them are responsible, then, the Contractor shall pay such costs of deductibles.

§ 11.2.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused.

§ 11.2.3.1 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.2.3.2 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance obtained by the Owner pursuant to the Agreement or other property insurance applicable to the Project, except such rights as the Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property. To

the extent that a waiver of subrogation is unavailable to the Owner, and the absence of such right of subrogation or the Owner's giving such a waiver would constitute a breach of its insurance policy; then as to the Owner this Section 11.3.5 shall be of no force or effect and no such waiver of subrogation shall be required of Owner

§ 11.3.2 A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.7. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner 3
(Paragraphs deleted)

§ 11.3.7 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five (5) days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement.

§ 11.5 Performance Bond and Payment Bond

§ 11.5.1 The Contractor shall furnish a Performance Bond and a Labor and Material Payment Bond each to be in an amount equal to one hundred percent (100%) of the Contract Sum meeting all statutory requirements of the State of New York, in form and substance satisfactory to the Owner and, without limitation, complying with the following specific requirements:

- .1 Except as otherwise required by statute, the form and substance of such bonds shall be satisfactory to the Owner in the Owner's sole judgment;
- .2 Bonds shall be executed by a responsible surety licensed in the jurisdiction of the Work with an AM Best's rating of no less than A/XII and shall remain in effect for a period not less than two (2) years following the date of Substantial Completion or the time required to resolve any items of incomplete Work and the payment of any disputed amounts, whichever time period is longer;
- .3 The Performance Bond and the Labor and Material Payment Bond shall each be in an amount equal to the Contract Sum;
- .4 The Contractor shall require the Attorney-in-Fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney indicating the monetary limit of such power;
- .5 Every Bond under this Section 11.5.1 must display the Surety's Bond Number. A Rider including the following provisions shall be attached to each Bond:
 - (1) Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Such addition, alteration, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety of its obligations hereunder and notice to the Surety of such matters is hereby waived.
 - (2) Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner, and the Owner shall have thirty (30) days from time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such Notice of Default shall be sent by certified or registered U.S. Mail, return receipt requested, first class postage prepaid, to the Construction Manager, Architect and the Owner.
 - (3) Notwithstanding anything in the Bond to the contrary, the Performance Bond shall not contain a condition that any meeting must be scheduled among Owner, Contractor and its surety, or any combination of them, prior to Owner declaring Contractor in default or prior to Owner terminating Contractor's Contract. Any such language in a Performance Bond shall be null, void and unenforceable.

- (4) Surety and Contractor shall be liable for the additional costs and expenses incurred by the Owner in

relation to the default of the Contractor including but not limited to architectural, engineering and/or consultants fees and disbursements.

§ 11.5.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

§ 11.5.3 The Contractor shall deliver the required bonds to the Owner prior to beginning construction activity at the site, but no later than seven (7) days after execution of the Contract. Said bonds shall be issued on form AIA Document A312.

§ 11.5.4 The Owner may, in the Owner's sole discretion and without prior notice to the Contractor, inform surety of the progress of the Contractor's Work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Contractor's Work.

§ 11.5.5 If the surety on any Bond furnished by the Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of this Article, the Contractor shall within ten (10) days thereafter substitute another Performance and Payment Bond and surety, both of which must be acceptable to the Owner.

§ 11.5.6 The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to, or waiver of: (1) notice of changes in the Work; (2) request for reduction or release of retention; (3) request for final payment; and (4) any other material required by the surety. The Owner, Construction Manager, and Architect shall be notified by the Contractor, in writing, of all communications with the surety. The Owner may, in the Owner's sole discretion, inform surety of the progress of the Work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Construction Manager's or Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by either, be uncovered for their examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Construction Manager or Architect has not specifically requested to examine prior to its being covered, the Construction Manager or Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Construction Manager or Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion, and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Construction Manager's and Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under Article 9, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section 2.4. The right of the Owner to require Contractor to correct Work not in accordance with the requirements of

the Contract Documents pursuant to this paragraph shall not give rise to any duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

§ 12.2.2.2 Without limitation to Section 12.2.2.1, the Contractor shall also furnish maintenance and 24-hour call back service for the equipment provided by it for a period of three (3) months after Final Completion and acceptance of the Work. This Work shall include all necessary adjustments, greasing, oiling, supplies, and parts to keep any supplied/installed equipment in proper operation except such parts made necessary by misuse, accidents or negligence not caused by the Contractor or any of its Subcontractors.

(Paragraphs deleted)

§ 12.2.2.3. In the judgment of the Owner should any material, equipment or systems require corrective work because of defects in material or workmanship within the two (2) year warranty period, or extended warranty periods, the Contractor shall complete all required corrective work within forty-five (45) days of notice. In the event the Contractor does not, in accordance with the terms and provisions of the Contract, complete all corrective work within forty-five (45) days, or comply with and fulfill their warranty obligations, the Owner will notify the bonding company to have such work and/or obligations performed at no additional cost to the Owner at the expense of the bonding company and/or the Contractor. The obligations of the Contractor under the terms and provisions of the Contract shall not however be limited to the surety retained by the Owner pursuant to the provisions of the Contract.

§ 12.2.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.5 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.6 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.7 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.8 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be affected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is. The parties expressly agree that any claim, dispute, or other controversy of any nature arising out of the Contract or performance of the Work, shall be commenced and maintained in New York State Supreme Court located in Westchester County, New York.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally

responsible for all obligations under the Contract. The Contractor shall not assign any monies due or to become due to it under the Contract without the prior written consent of the Owner.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Written Notice

(Paragraphs deleted)

§ 13.3.1 All notices and other communications required to be in writing (including without limitation all notices relating to Claims, defaults or termination) shall be deemed to have been duly given or delivered: (i) if delivered by hand to the addresses below against a signed receipt, upon delivery; (ii) if deposited with a nationally recognized and reputable overnight delivery service for overnight delivery to the addresses below, upon one (1) day following deposit with such overnight delivery service (with proof tender); or (iii) if by certified mail, return receipt requested, postage prepaid addressed to the addresses below; upon three (3) business days after it is posted with the United States Postal Service. If the delivery of notice above shall fall on a non-business day or holiday, then delivery of the notice shall be deemed to have been made on the next following business day. All such notices shall be delivered to:

(i) If to Owner, addressed to:

Lakeland Central School District
1086 East Main Street
Shrub Oak, NY 10588
Attn: Dr. Karen Gagliardi, Superintendent of Schools and
School Business Administrator

with a copy to Construction Manager:

Triton Construction, Inc.
1279 NY-300, 1st Floor
Newburgh, New York 12550
Att: _____

and

(ii) if to Contractor, addressed to:

[TO BE INCLUDED]

If notice is tendered under the provisions of this Section 13.3 and is refused by the intended recipient of the notice, the notice shall nonetheless be considered to have been given and shall be effective as set forth above.

Either party may designate from time to time, by an appropriate writing, written notice to the other parties.

§ 13.4 Rights and Remedies

§ 13.4.1 Except as expressly provided in the Contract Documents, duties and obligations imposed by the Contract Documents on Contractor and rights and remedies available to the Owner thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law or in equity, or by other agreement, and such rights and remedies shall survive acceptance of the Work and/or termination of the Contract Documents.

§ 13.4.2 No action or failure to act by the Owner, Construction Manager, or Architect, shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

(Paragraphs deleted)

§ 13.5 Tests and Inspections

§ 13.5.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an

independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.5.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.5.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If procedures for testing, inspection, or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, and also including Owner's attorneys' fees, costs and expenses, arising out of or related to same, shall be at the Contractor's expense. The Contractor agrees that the cost of testing services required for the convenience of the Contractor in his scheduling and performance of the Work, and the cost of testing services relating to remedial operations performed to correct deficiencies in the Work shall be borne by the Contractor

§ 13.5.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.5.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5.7 Upon request the Contractor shall deliver test samples of any of the materials specified in these specifications to an independent testing agency. The Owner shall pay for the test of samples, which are found to conform to the specifications. The Contractor shall pay for the tests of samples, which do not conform to the specifications. This shall not relieve the Contractor of its obligations to perform specific tests described elsewhere in these specifications.

§ 13.5.8 Where the specifications require part of the work to be specially tested and approved, it shall not be tested or covered up without timely notice thereof or consent thereto by Owner and Construction Manager. Should any part of the work be covered up without notice, approval or consent, such part of the work shall be uncovered for examination at the Contractor's expense if the Owner shall so require.

§ 13.5.9 Where operating tests are specified, the Contractor shall test the work as it progresses, on its own account, and shall make satisfactory preliminary tests in all cases before applying for official tests.

§ 13.5.10 Tests shall be made in the manner specified, for the different branches of the work. Each test shall be made on the entire system for which such test is required, wherever practical. In case it is necessary to test portions of the work independently, the Contractor shall do so.

§ 13.5.11 Should defects appear, they shall be corrected by the Contractor and the test repeated until the installation is acceptable.

§ 13.5.12 When notice of tests is to be given to the Architect, it shall also be given to the Construction Manager.

§ 13.6 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the legal municipal rate prevailing from time to time at the place where the Project is located.

§ 13.7 Time Limits on Contractor's Claims

The Contractor shall commence all Claims and causes of action, including without limitation all notice requirements relating to Claims, whether in contract, tort, or otherwise, against the Owner arising out of or related to the Contract in strict accordance with the requirements of the Contract Documents (including without limitation strict compliance with all conditions precedent to the making of such Claims as required by the Contract Documents) and as required by applicable law, including without limitation within all applicable time periods specified by applicable law. The Contractor waives all claims and causes of action not commenced in accordance with this Section 13.7.

Notwithstanding anything herein or elsewhere in the Contract Documents to the contrary, Contractor shall absolutely and strictly comply with New York State Education Law §3813.

§ 13.8 The Owner shall not be responsible for damages or for loss of anticipated profits or any other damages whatsoever on Work not performed on account of any termination of the Contractor by the Owner or by virtue of the Owner's exercise of its right to take over the Contractor's Work pursuant to this Contract.

§ 13.9 The Owner shall not be liable to the Contractor for punitive damages on account of its termination of the Contractor or any other alleged breach of the Contract between Owner and the Contractor, and the Contractor hereby expressly waives its right to claim such damages against the Owner.

§ 13.10 The Contractor hereby expressly waives any rights it may have in law or in equity to lost bonding capacity as a result of any of the actions of the Owner, the Architect or the Construction Manager taken in connection with the Contractor's Work on the Project.

§ 13.11 The Contractor agrees and acknowledges that payments for the Work have been obtained through obligations or bonds which have been sold after public referendum. In the event the Work is suspended or canceled as a result of the order of any court, agency, department, entity or individual having jurisdiction, or in the event the Work is suspended or canceled due to the fact that a court, agency, department, entity or individual having jurisdiction has issued an order, the result of which is that the aforesaid obligations or bonds are no longer available for payment for the Work, the Contractor expressly agrees that it shall be solely entitled to payment for Work accomplished until a notice of suspension or cancellation is served upon it. The Contractor expressly waives any and all rights to institute an action, claim, cause of action or similar for any damages it may suffer as a result of the suspension or cancellation of the Work and/or its Contract pursuant to this section.

§ 13.12 It is the intent and understanding of the parties to this Contract that each and every provision of law required to be inserted in this Contract shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this Contract shall forthwith be deemed amended by such insertion so as to comply strictly with the law.

§ 13.13 Liens. At all times, Contractor shall fully and promptly pay and discharge any and all commitments and claims and to the fullest extent permitted by law, wholly defend, protect, indemnify and hold harmless Owner (and its board members, officers, directors, agents, servants, employees) from and against any and all mechanics' or materialmen's liens or claims by Subcontractors or others in connection with the Work and against all damages, liability, cost and expense arising out of or related thereto (whether direct or consequential notwithstanding any provisions of the Contract to the contrary) and including all reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder). In connection with the foregoing, all mechanics' or materialmen's liens which relate to the Work of this Contract shall be removed, discharged or bonded by Contractor within thirty (30) days of notice from Owner. If Contractor fails to commence the process to discharge or remove the lien within five (5) business days after notice of the lien, and notify Owner thereof in writing, or if Contractor thereafter fails to diligently prosecute such discharge or removal to the satisfaction of Owner in its sole discretion, Owner shall, without limitation to Contractor's full indemnification obligation under this Section, have the right to remove, discharge or bond such lien and deduct the cost thereof (including the amount paid or bonded plus reasonable attorneys' fees and disbursements) from any payment due the Contractor.

§ 13.14 No assignment, transfer, conveyance, subletting or other disposition of all or any part of the Contract, or of any of the moneys due or to become due thereunder, or of any right, title or interest therein by Contractor to any person or entity will be permitted or allowed without the previous consent, in writing, of the Owner.

§ 13.15 Equal Opportunity

§ 13.15.1 The Contractor shall maintain policies of employment as follows:

- .1 The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, gender, or national origin, or any other applicable discriminatory classification in state or federal law. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, gender, or natural origin, or any other applicable discriminatory classification under state or federal law. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the policies of non-discrimination.
- .2 The Contractor and the Contractor's subcontractors shall, in all solicitations or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, gender, or national origin, and other applicable discriminatory classifications under state or federal law.

§ 13.16 Wage Rates

§ 13.16.1 The Contractor shall comply with Prevailing Wage Rates issued and periodically updated, by the New York State Department of Labor, for the location and duration of the Project.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract in the manner provided hereinbelow if the Work is stopped for a period of ninety (90) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, under direct or indirect contract with the Contractor, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or
- .3 Because Contractor has appropriately stopped Work pursuant to Section 9.7 above;

§ 14.1.2 The Contractor may terminate the Contract in the manner provided hereinbelow if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, under direct or indirect contract with the Contractor, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon fourteen (14) days' notice to the Owner, Construction Manager and Architect, terminate the Contract unless (but not in the instance the event in Section 14.1.2 is applicable) such reason is cured prior to the expiration of said notice period (or if such breach by its nature cannot be cured within such notice period, Owner has diligently commenced to cure such breach and in good faith continues to complete such cure) and only recover from the Owner payment for Work executed, as well as overhead and profit at a rate not greater than 10% on such Work through the effective date of termination in compliance with the Contract Documents, it being understood and agreed, however, that that Owner shall incur no other liability to Contractor by reason of such termination, with it being further understood and agreed that the Owner shall not be responsible for or required to pay Contractor for any costs or damages for loss of anticipated overhead and/or profit on Work not performed on account of any termination described in this Section 14.1 and its subsections.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees, or any other persons performing portions of the

Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner, Construction Manager and Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- .4 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all requirements of the Contract Documents;
- .5 fails to keep the Project free from strikes, work stoppages, slowdowns, lockouts, or other disruptive activity;
- .6 is adjudged a bankrupt or insolvent, or make a general assignment for the benefit of a Contractor's creditors, a trustee or receiver is appointed for Contractor or for any of its property, or files a petition to take advantage of any debtor's act or to reorganize under bankruptcy or similar laws;
- .7 refuses or fails to correct deficient Work performed by it;
- .8 disregards the instructions of the Construction Manager, Architect or owner (when such instructions are based on the requirements of the Contract Documents); or
- .9 otherwise does not fully comply with the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety seven (7) days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Take possession of materials stored off-site by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient.

The notice provision in this Section 14.2.2 is for informational purposes only and it is expressly agreed that the Contractor shall have no right to cure.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's (including their consultants') services and expenses made necessary thereby, and including Owner's attorneys' fees (including for appeals and enforcement of the obligations under this provision or enforcement of any judgment and collection hereunder) and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages (including Owner's attorneys' fees described herein) exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine. The Contractor shall continue to perform that portion of its Work that has not been suspended, delayed, or interrupted, and shall properly protect and secure the portion of its Work so suspended, delayed or interrupted.

§ 14.3.2 The Contract Time shall be adjusted for increases in the time caused by suspension, delay, or interruption under Section 14.3.1, it being expressly agreed that the Owner shall incur no liability to Contractor by reason of such suspension, delay or interruption except that Contract may request an extension of its time to complete its Work in accordance with the Contract Documents. No adjustment shall be made to the extent:

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible;
- .2 that an equitable adjustment is made or denied under another provision of this Contract; or
- .3 Contractor waives its rights to an adjustment by operation of any other provision of the Contract Documents

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. Termination shall be effective immediately upon delivery of Owner's written notice to Contractor unless specified otherwise by Owner in writing in such notice.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice or for Subcontractors for which Owner accepts assignment as provided in the Contract Documents and specified in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 If the Contractor's Work is so terminated, the Owner shall not be liable to the Contractor by reason of such termination except that the Contractor shall be entitled to payment for the Work it has properly executed through the effective date of termination in compliance with the Contract Documents, including reasonable overhead and profit on such Work executed (with the basis for such payment as provided in the Contract Documents); it being agreed and understood, however, that Owner shall incur no other liability to Contractor by reason of such termination, with it being further agreed and understood that the Owner shall not be responsible for or required to pay Contractor for any costs or damages for loss of anticipated overhead and/or profit on Work not performed on account of any termination described in this Section 14.4 and its subsections

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 15.1.2 Time Limits on Contractor's Claims/Notice of Claims

It is a condition precedent to Contractor's ability to pursue any Claim that written notice of the Claim by Contractor in strict compliance with the requirements of this Section 15.1.2 must be initiated by written notice to the Owner with a copy sent to the Construction Manager and Architect. within twenty-one (21) days after occurrence of the event giving rise to such Claim or within twenty-one (21) days after the Contractor first recognizes the condition giving rise to the Claim, whichever is later so that the Owner can properly investigate the Claim, TIME IS EXPRESSLY OF THE ESSENCE WITH RESPECT TO CONTRACTOR'S GIVING OF NOTICE OF CLAIM TO OWNER AS PROVIDED HEREIN AS A CONDITION PRECEDENT TO ITS ABILITY TO ASSERT OR OTHERWISE PURSUE ANY CLAIM. The notice of Claim shall set forth: (1) the reasons for which the Contractor believes additional compensation will or may be due or additional time should be granted; (2) the nature of the costs involved; (3) the Contractor's plan for mitigating such costs; (4) if ascertainable, the amount of the potential Claim. For any Claim initiated after the time limit set forth in this Section 15.1.2 or otherwise not in compliance with the information required by this Section 15.1.2, Contractor shall be deemed to have expressly waived any such Claim and shall forfeit any rights that it may have pursuant to this Contract or in law or equity to ever assert or otherwise pursue such Claim. The requirements of this Section are in addition to Contractor's obligation to strictly comply with New York State Education Law §3813.

§ 15.1.3 Continuing Contract Performance

§ 15.1.3.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker. It is understood That a violation of this provision by Contractor shall cause irreparable harm to the Owner.

(Paragraph deleted)

§ 15.1.4 Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided in Section 15.1.2 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

(Paragraphs deleted)

§ 15.1.5 Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided herein shall be given as required by Article 8 hereinabove. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.5.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

§ 15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

§ 15.1.6 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude award of liquidated Delay Damages, when applicable, in accordance with the requirements of the Contract Documents.

(Paragraphs deleted)

§ 15.1.7

(Paragraphs deleted)

The Construction Manager, Architect and/or the Owner may, but are not obligated to, notify the Surety of the nature and/or estimated amount of any Claim that the Owner or others may have against Contractor. If such Claim relates to a possibility of a Contractor's default/termination, the Construction Manager, Architect, and/or Owner may, but are not obligated to notify the Surety and request the Surety's assistance in resolving the controversy.

§ 15.1.8 No Damage for Delay: Contractor acknowledges that delays are common to construction projects of this nature, that the Drawings and Specifications and other Contract Documents for the Project may be incomplete and/or contain errors and discrepancies which will necessitate the issuance of Change Orders to correct existing deficiencies, that changes to the Drawings and Specifications often require extensive and time consuming reviews by many individuals before they may be approved or ratified, that the processing of Shop Drawings may be inordinately slow, that there may be delay, impact, hindrance or interference from other Prime Contractors or other separate contractors retained by Owner or visitors to the Project site or from directions given or not given by the Construction Manager, Owner or Architect, or any of their consultants, including scheduling and coordination of the Work, and that Contractor may encounter adverse weather conditions or force majeure events, whether or not foreseeable or anticipated (all of which shall be deemed "Contemplated Delays"). Accordingly, and notwithstanding any other provisions of this Subcontract, except to the extent expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any Claim, and contractually assumes the risk of, any and all loss and expense and damages for delay, interference, hindrance or impact to the progress of its Work, loss of productivity or efficiency, loss of profit, extended home office overhead or any increased costs (including but not limited to increased labor or material costs), for or on account of any delay, obstruction, interference or hindrance, or other impacts to the performance of its Work for any reason whatsoever, including without limitation Contemplated Delays, it being understood the risk for all loss and expense for delay having been anticipated by Contractor's execution of this Subcontract. IT IS EMPHASIZED THAT NO MONETARY RECOVERY MAY BE OBTAINED BY THE CONTRACTOR FOR ANY DELAY AGAINST THE OWNER, OR CONSTRUCTION MANAGER OR ARCHITECT BASED ON ANY REASON AND THAT THE CONTRACTOR'S SOLE REMEDY, IF APPROPRIATE, IS ADDITIONAL TIME FOR COMPLETION OF THE WORK, the amount of which shall be subject to the procedures set forth in this Contract. The intent of this section is to avoid protracted costly litigation as to whether delays, should they occur, were anticipated or unanticipated, foreseeable or unforeseeable, reasonable or unreasonable or as to whether or not they were the fault of Contractor, other Prime Contractors, Owner, Construction Manager, Architect, other contractors or their representatives. Contractor agrees that all such delays, regardless of duration, are within the contemplation of the parties. Contractor has certified that it has considered, as an experienced contractor, the risk of encountering such delays in reaching agreement with Owner on the Contract Sum for the Work.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim arising prior to the date of final payment is due. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days of receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.
(Paragraphs deleted)

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Reconstruction to
Walter Panas High School
Lakeland High School
Lakeland Copper Beech Middle School
Tt Project No. 276721-23001

...

Triton Construction, Inc.
1279 NY-300, 1st Floor
Newburgh, New York 12550

...

Lakeland Central School District
1086 East Main Street
Shrub Oak, New York 10588

...

(Name, legal status, and address)

Tetra Tech Engineers, Architects & Landscape Architects, P.C.
d/b/a Tetra Tech Architects & Engineers
Cornell Business & Technology Park
10 Brown Road
Ithaca, New York 14850

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§ 1.1.1 The Contract Documents. The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. ~~Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of addenda relating to bidding or proposal requirements.~~ The Contract Documents include the Notice to Bidders, Instructions to Bidders, sample forms and the Contractor's bid.

§ 1.1.2 The Contract. The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements,

either written or oral. The Contract may be amended or modified only by a ~~Modification~~ Modification in a written instrument signed by Owner, or Architect in the case of a written order for a minor change in the Work. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and the Construction Manager or the Construction Manager's consultants, (3) between the Owner and the Architect or the Architect's consultants, (4) between the Contractor and the Construction Manager or the Construction Manager's consultants, (5) between the Owner and a Subcontractor or Sub-subcontractor (6) between the Construction Manager and the Architect, or (7) between any persons or entities other than the Owner and Contractor. ~~The Construction Manager and Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of their duties.~~ No obligation of the Construction Manager and/or Architect to the Owner, whether expressed by agreement or implied by law, shall be construed as intended for the benefit of the Contractor. Nothing in the Contract Documents nor in any aspect of the Construction Manager and/or Architect's relationship with the Owner shall create or give rise to any duty whatsoever on the part of the Construction Manager and/or Architect to the Contractor. The term "Contractor" in this paragraph shall include the Contractor, its officers, employees, agents, contractees and Subcontractors of any tier.

§ 1.1.3 The Work. The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project. The Work included is general and in no way limits or qualifies the Contract requirements.

...

§ 1.1.5 Contractors. Contractors are persons or ~~entities, other than the Contractor or Separate Contractors, entities~~ who perform Work under contracts with the Owner that are administered by the Architect and Construction Manager.

...

The Specifications may describe (or the Drawings may show) the general placement required of materials or equipment, but the actual required placement may vary depending on the specific material or equipment used by the Contractor or the existing field conditions. The Contractor shall bear all direct and indirect costs associated with such variations.

Some Specifications may be written in a condensed outline form and omitted words shall be included by interference. If the Specifications identify a task, it shall mean the "Contractor shall furnish, install and complete" the identified task unless otherwise stated.

Reference to standard specifications, manuals or codes shall mean reference to the latest standard specification, manual or code in effect at the time of the execution of the Owner-Contractor Agreement, unless otherwise stated. When reference is made to a manufacturer, trade association, reference standard or similar source (such as ASTM, ASA, AISC, ACI, etc.) the standards or requirements of such entity shall be incorporated into the Specifications and have the force and effect as though they were set forth expressly. Upon entering into the Owner-Contractor Agreement, the Contractor acknowledges its familiarity with those references, codes, etc. The date of the referenced standard shall be the latest edition in effect at the time of the execution of the Owner-Contractor Agreement unless otherwise stated.

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§ 1.1.23 Minor Change in the Work. "Minor Change in the Work" refers to Architect ordered minor changes that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum of an extension of the Contract Time. The Architect's order for minor changes must be in writing.

§ 1.1.24 Nothing in the Contract Documents shall relieve Contractor from its requirement to comply with all applicable statutory requirements and other governmental or quasi-governmental codes, rules and regulations, including, without limitation, those contained in New York State Education Law §3813.

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. Items not expressly included in the Contract Documents, but which are reasonably inferable therefrom as being necessary to produce the intended results shall be deemed included in the Work. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 ~~The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.~~ Whenever any additional materials and/or workmanship not shown or specified are required to complete the Work of the Contract Documents in accordance with the intent thereof, the Contractor shall provide these materials and workmanship at no additional cost to the Owner.

§ 1.2.1.2 Execution of the Contract by the Contractor is a representation that the Contractor has carefully examined the Contract Documents (and the site, and represents that the Contractor is thoroughly familiar with the nature and location of the Work, the site and all improvements thereon, the specific conditions under which the Work is to be performed, and all matters which may in any way affect the Work or its performance. The Contractor further represents that as a result of such examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose, and is familiar with all applicable codes, ordinances, laws, regulations, and rules as they apply to the Work, and that the Contractor will abide by same. Claims for additional time or additional compensation as a result of the Contractor's failure to follow the foregoing procedure and to familiarize itself with all local conditions and the Contract Documents will not be permitted. The Contractor shall also review accessibility and general character of the site or building(s), the extent of existing work within or adjacent to the site, and any other work being performed thereon at the time of submission of his bid

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade. The Specifications may be generally divided into trade sections, and, if so, it is for the purpose of convenience and ready reference only. The Contractor will be permitted to allot the work of Subcontractors at his own discretion regardless of the groupings in the Specifications. It shall be the Contractor's responsibility to settle definitely with each Subcontractor the portions of the Work which each will be required to perform and the Owner (including the Owner's Representative), Construction Manager and Architect assume no responsibility whatsoever for any jurisdiction claimed by any of the trades/Subcontractors involved in the Work. The Contractor shall, subject to the other terms of the Contract Documents, provide each item listed, of quality noted and subject to qualifications noted, and shall perform operations prescribed according to the conditions stated, furnishing therefore all necessary labor, materials, equipment and incidentals required to complete the Work. Contractor represents that the Subcontractors, manufacturers and suppliers engaged or to be engaged by it are and will be familiar with the requirements for performance by them of their obligations.

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§ 1.2.3.1 In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities:

- .1 Modifications, as defined in Section 1.1.1.
- .2 The Agreement.
- .3 Addenda, with those of later date having precedence over those of earlier date.
- .4 The General Conditions of the Contract for Construction.
- .5 Division 01 of the Specifications.
- .6 Drawings and remaining Divisions of the Specifications.

In the case of conflicts or discrepancies between Drawings and Divisions of the Specifications (other than Division 01), or within or among the Contract Documents and not clarified by Addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13.

§ 1.2.4 The Contractor shall provide all labor, materials, equipment, appliances and services necessary to execute and complete all work as required by the Contract Documents and the applicable Building Codes. Contractors shall conduct pre-construction surveys and provide photo/videos of any existing damage in areas where new construction is to take place prior to the start of work. A copy of such documentation shall be provided to the Owner's representative.

§ 1.2.4.1 The Contractor and each Subcontractor shall evaluate and satisfy themselves with the conditions at the site and limitations under which the Work is to be performed including, without limitation, (1) the location, condition, layout and nature of the Project site and surrounding areas, (2) generally prevailing climatic conditions, (3) anticipated labor supply and costs, (4) availability and cost of materials, tools and equipment, (5) any time restrictions for accessing or working at the site, (6) the storage, handling and trucking of materials to be used on-site, and (7) all other matters as may be incidental to the work under the Contract, before and after delivery of the bid proposal.

§ 1.2.4.2 The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any improvements located on the Project site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time in connection with any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph 1.2.

§ 1.2.4.3 Contractor represents and warrants that its investigation of the site was performed in detail and was sufficient to disclose the condition of the Project Site and all improvements thereon, and the conditions under which the Work is to be performed, including, without limitation (i) the location, condition, layout and nature of the Project Site and surrounding areas; (ii) anticipated labor supply costs; (iii) availability and cost of materials, tools, and equipment; and (iv) other similar issues pertinent to the performance of the Work.

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§ 1.4.1 The Contractor represents that prior to execution of the Contract, it has consulted with an attorney, that the attorney has reviewed all of the Contract Documents and that the Contractor has signed the Contract Documents only after such consultation with its attorney. Accordingly, the maxim that this Contract shall be construed against the Party who drafted it shall not apply to the interpretation of this Contract or any of the Contract Documents.

§ 1.4.2 Severability. In the event that any term or provision, or part thereof, of this Contract or any of the Contract Documents is held to be illegal, invalid or unenforceable under applicable law by a court of competent jurisdiction, such term or provision, or part thereof, shall be deemed ineffective to the extent of such invalidity or unenforceability only and severed from the Contract Documents and the remaining term(s) and provision(s) shall remain unaffected thereby.

§ 1.4.3 Captions. Titles or captions of Articles, Sections, and Exhibits contained in the Contract Documents are inserted only as a matter of convenience and for reference, and in no way define, limit, extend or describe the scope of the Contract Documents or the intent of any provision hereof.

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including ~~copyrights~~ copyrights, except to the extent set forth in the Owner-Architect Contract. The Contractor, Subcontractors, sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

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§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to

whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.5.3 Notwithstanding the preceding sections 1.5.1 and 1.5.2, nothing contained in this Section 1.5 or elsewhere in the Contract Documents shall modify the rights granted to Owner by Architect in relation to the Instruments of Service as set forth in the separate agreement between Owner and Architect.

§ 1.6 References to trade publications, industries, and published standards shall carry the latest date, including latest revisions, unless dated to the contrary. Further, all work mentioned or indicated in the Contract Documents shall be performed by the Contractor as part of this Contract unless it is specifically indicated in the Contract Documents that such Work is to be done by others. All work shall conform to the National Electric Code, the National Board of Fire Underwriters and applicable City, Town and State Building Codes and Authorities having jurisdiction.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon written protocols governing the transmission and use of, and reliance on, Instruments of Service or any other information or documentation in digital form. The Contractor and all Subcontractors shall refer to all of the Drawings, including those showing primarily the work of the plumbing, heating, ventilation, air conditioning, electrical, and other specialized trades, and to all of the sections of the Specifications, and shall perform all work reasonably inferable therefrom as being necessary to produce the indicated results.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to written protocols governing the use of, and reliance on, the information contained in the model shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees. All indications or notations on the drawings which apply to one of a number of similar situations, materials, or processes shall be deemed to apply to all such situations, materials, or processes wherever they appear in the Work, except where a contrary result is clearly indicated by the Contract Documents.

§ 1.9 The general character of the detailed work is shown on the drawings, but minor modifications may be made on the full size drawings. Any details shall be worked out in relation to their location and their connection to other parts of the work. Where details or conditions are indicated in summary form, such details or conditions shall be continued throughout the course or parts in which they occur. The Contractor shall be responsible for the complete and correct application of such details throughout the portions of the project in which they occur.

§ 1.10 Should the Architect's written interpretations, in the opinion of the contractor, show additional work, or work of more expensive character than that shown or inferred by the Contract Drawings, it shall be the duty of the Contractor to so notify the Architect through the Construction Manager within five (5) days from receipt of same in order that proper adjustment may be made if found justifiable in the opinion of the Architect, Construction Manager, and the Owner. The Contractor shall assume full responsibility for all such work done without the approval of the Architect, the Construction Manager, and the Owner.

§ 1.11 Confidentiality

§ 1.11.1 The Contractor warrants and represents that the Contractor shall not knowingly or negligently communicate or disclose at any time to any person or entity any information in connection with the Work or the Project, except: (1) with prior written consent of the Owner, (2) information that was in the public domain prior to the date of this Agreement, (3) information which becomes part of the public domain by publication or otherwise not due to any unauthorized act or omission of the Contractor, (4) as may be required to perform the Work or by any applicable law, or (5) for purposes of coordination with other prime contractors.

§ 1.11.2 The Contractor, any time upon request of the Owner, shall immediately return and surrender to the Owner all copies of any materials, records, notices, memoranda, recordings, drawings, specifications, and mock-ups and any other documents furnished by the Owner of the Architect to the Contractor.

§ 1.11.3 The Contractor shall specifically cause all Subcontractors or any other person or entity performing any services or furnishing any materials or equipment of the Work to warrant and represent all items set forth in this Paragraph 1.6.

§ 1.11.4 The representations and warranties contained in this Paragraph 1.11 shall survive the complete performance of the Work or earlier termination of this Agreement.

§ 1.12 Notice

§ 1.12.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.12.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.13 Submittal Exchange

Submittal Exchange, a web-based construction phase software for managing project submittals, RFI's, and other construction phase paperwork, shall be used by all parties on this project. The Architect will be the administrator for the Submittal Exchange system on this project.

§ 1.13.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect and/or Construction Manager for services required by the Contractor's failure to use Submittal Exchange in the submission and processing of construction phase paperwork.

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§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Lakeland Central School District is the Owner and the Board of Education of the Lakeland Central School District shall be the only entity with authority to bind the Owner or provide approval or authorization on behalf of the Owner as required by law and/or the policies and procedures of the Lakeland Central School District unless Contractor is notified otherwise in writing signed by the Owner. Except as otherwise provided in Section 4.2.1, 4.2.1 or Article 4, the Construction Manager and the Architect do not have such authority. The term "Owner" means the Owner or the Owner's authorized representative. With respect to any Claim by Contractor, including without limitation any Claim for a Change Order or any Claim for an extension of the Contract Time or upward adjustment of the Contract Sum, any rejection of such Claim, either in whole or in part, made by Construction Manager or the Architect to Contractor shall be deemed to have been made by the Owner unless the Owner's decision to the contrary is set forth in writing.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements Information and Services Required of the Owner

§ 2.2.1 Prior to commencement of the Work, and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately. With the exception of the building permit, all permits and fees, approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities are the responsibility of the Contractor under the Contract Documents. Contractor's price shall include all fees and other costs for securing and maintaining (by Contractor or its Subcontractors) for the life of the Project: all permits, PE licenses, connection fees, inspections, etc., applicable to, or customarily secured for the Work. This

provision includes any permits to be issued in the name of the Contractor as required for the Work. The Contractor shall furnish Construction Manager and Architect or Owner with original copies of all permits prior to the commencement of Work and shall prominently display a copy of all permits at a location agreed upon with the Construction Manager or Owner

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents. The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor. The Owner shall retain a construction manager lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information. If reasonable requested by the Contract in writing, the Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.5 Following receipt of a reasonable written request from the Contractor, the Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's reasonable written request for such information or services.

§ 2.2.7 The Owner shall furnish the Contractor two copies of the Contract Documents, including one set to be used for the Project Record Drawings. The Contractor may purchase additional copies, at his own expense, at the cost of reproduction, postage and handling.

§ 2.2.8 The Owner shall endeavor to forward all communications to the Contractor through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the Contract Documents.

§ 2.3 ~~Information and Services Required of the Owner~~ Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents or fails to carry out Work in accordance with the Contract Documents, or fails or refuses to provide a sufficient amount of properly supervised and coordinated labor, materials, or equipment so as to permit the Owner to reasonably infer that the Contractor will not be able to complete the Work within the Contract Time or fails to remove, bond or discharge

(within thirty [30] days after actual notice or notice pursuant hereto from the Owner or the Construction Manager) any lien filed upon or against Owner's property or against the Project funds by anyone claiming by, through, or under Contractor, or disregards the instructions of Construction Manager, Architect or Owner when such instructions are based upon the requirements of the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated to the satisfaction of the Owner, in its discretion; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities. Unless otherwise provided under the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 The Owner shall retain a construction manager adviser lawfully practicing construction management in the jurisdiction where the Project is located. That person or entity is identified as the Construction Manager in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.4 If the employment of the Construction Manager or Architect terminates, the Owner shall employ a successor construction manager or architect to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Construction Manager or Architect, respectively.

§ 2.3.5 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.6 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.7 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.3.8 The Owner shall forward all communications to the Contractor through the Construction Manager. Other communication shall be made as set forth in Section 4.2.6.

§ 2.4 Owner's Right to Stop the Work

Owner's Right to Carry Out the Work
If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the defaults or neglects to carry out the Work in accordance with the Contract Documents or is otherwise in default of any term of the Contract Documents, and fails within a three-day period after delivery of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness (to the reasonable satisfaction of the Owner), the Owner may at the end of such three-day period with no further notice required, without prejudice to other remedies the Owner may have, correct such deficiencies.. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect or failure, and also including, without limitation, the Owner's reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), and all other reasonable expenses relating thereto. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. Such Change Order shall be deemed to have been executed by the Contractor,

whether or not actually signed by the Contractor. The right of the Owner to stop and carry out the Work (or any portions thereof) pursuant to this paragraph shall not give rise to a duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.entity.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to review by the Construction Manager and prior approval of the Architect, and the Construction Manager or Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Construction Manager's and Architect's and their respective consultants' additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

§ 2.5 Owner's Right to Audit. Contractor shall keep full and accurate records of all costs incurred and items billed in connection with the performance of the Work, which records shall be open to audit by the Owner or its authorized representatives during performance of the Work and until six (6) years after Final Payment. In addition, the Contractor shall make it a condition of all subcontracts relating to the Work that any and all Subcontractors will keep accurate records of costs incurred and items billed in connection with their work and that such records shall be open to audit by the Owner or its authorized representatives during performance of the Work and until six (6) years after its completion.

§ 2.6 Owner's rights stated in this Article 2 are cumulative and not in limitation of any rights of the Owner granted elsewhere in the Contract Documents, or at law or in equity. Further, it is expressly understood that notwithstanding any of the rights and authority granted the Owner in this Article 2 or elsewhere in the Contract Documents, in no event shall the Owner, Construction Manager or Architect have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work.

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§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents. plural term "Multiple Prime Contractors" refers to persons or entities who perform construction under contracts with the Owner that are administered by the Construction Manager. The term does not include the Owner's own forces, including persons or entities under separate contracts not administered by the Construction Manager.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor. Documents.

§ 3.1.4 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Construction Manager or Architect in their administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

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§ 3.2.1 Execution Submission of its bid to the Owner and subsequent execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with has carefully examined the Contract Documents and has visited and has performed a detailed investigation of the site, become thoroughly familiar with the nature and local conditions under which the Work is to be performed, and correlated personal observations performed (including but not limited to its condition, layout, nature, surrounding areas, climatic conditions, etc.) and all matters which may in any way affect the Work or its performance and correlated personal observations and investigations with requirements of the Contract Documents. Submission of its bid to the Owner and subsequent

execution of the Contract by the Contractor is a further representation that the Contractor has carefully examined the Contract Documents (with such review in Contractor's capacity as a contractor and not a design professional unless otherwise specifically provided in the Contract Documents) and that any errors, omissions, ambiguities, discrepancies or conflicts found in said Contract Documents have been brought to the attention of the Architect for clarification prior to the Contractor's submission of its bid. The Contractor further represents that as a result of its examinations and investigations, the Contractor thoroughly understands the Contract Documents and their intent and purpose and is familiar with all federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to the Work, and that the Contractor will abide by same. The Owner assumes no responsibility or liability for the physical condition or safety of the Project site or any other improvements located on the Project site. As required by this Contract, the Contractor shall be responsible for providing a safe place for the performance of the Work. Claims for extension of the Contract Time or additional compensation as a result of the Contractor's failure to follow the foregoing procedures and to familiarize itself with all local conditions and the Contract Documents shall not be allowed.

§ 3.2.1.1 The Contractor is deemed to be a qualified expert in the systems and construction requirements of the Work of its Contract. The Contractor hereby specifically acknowledges and declares that the Contract Documents are full and complete, are sufficient to have enabled it to determine the cost of the Work and that the Drawings, the Specifications and the Addenda are sufficient to enable the Contractor to construct the Work outlined therein in accordance with all federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to the Work, and otherwise to fulfill all of its obligations under the Contract Documents. In addition, if the Contractor performs any construction activity while it knows or should have known that any of the Contract Documents contains an error, inconsistency or omission, the Contractor shall be responsible for such performance and shall bear the costs for correction thereof.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before ordering any materials and before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.5, Owner, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it, and otherwise verify all field conditions. Contractor shall be responsible for the correctness of all measurements. Contractor shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing activities. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies errors or omissions in the Contract Documents; however, the Contractor shall promptly report to the Construction Manager and Architect any errors, inconsistencies or omissions discovered by or made known to, made known to or that should have been discovered by the Contractor as a request for information submitted to the Construction Manager in such form as the Construction Manager and Architect may require, require before commencing activities. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents. Any errors due to the Contractor's failure to so verify all such grades, elevations, locations or dimensions shall be promptly rectified by the Contractor without any additional cost to the Owner.

§ 3.2.2.1 The accuracy of grades, elevations, dimensions, or locations of existing conditions is not guaranteed by the Construction Manager, Architect or Owner, and the Contractor is responsible for verifying same. No extra charges or compensation or extension of the Contract Time will be allowed on account of differences between actual dimensions and the dimensions indicated on any Drawings or elsewhere in any Contract Documents. Any difference that may be found shall be submitted to the Construction Manager and Architect for resolution before proceeding with the Work.

§ 3.2.2.2 If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit through the Construction Manager detailed drawings of such departure for the approval of the Architect before making the change.

§ 3.2.2.3 In case of omissions or discrepancies between the Contract Documents, the Contractor shall secure instructions from the Architect through the Construction Manager before proceeding with the Work affected by omissions or discrepancies. The Contractor shall assume full responsibility and cost for proceeding with such Work without approval.

§ 3.2.2.4 During the course of Work, should any errors, omissions, ambiguities, discrepancies or conflicts be found on the Drawings or in the Specifications to which the Contractor has failed to call attention before submitting its bid, the

Architect through the Construction Manager shall interpret the intent of the Drawings and Specifications and the Contractor hereby agrees to abide by the Architect's interpretation and agrees to carry out the Work in accordance with the decisions of the Architect at no additional cost to Owner or compensation for Contractor and with no extension of the Contract Time.

§ 3.2.2.5 Salvageable Materials: All existing materials, equipment, misc. etc. scheduled for demolition are the property of the Owner. If requested or as identified in Project Documents, Contractors will remove and store any such items to a location designated by the Owner.

§ 3.2.2.6 Do not scale Drawings. Follow figure dimensions, confirming on site.

§ 3.2.3 The Contractor in its review of the Contract Documents as required herein is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Construction Manager and Architect any nonconformity of the Contract Documents with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful order of public authorities discovered by or made known to the Contractor as a request for information submitted to Construction Manager in such form as the Construction Manager and Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved it is entitled under the Contract Documents to either or both of an increase in the Contract Sum or extension of the contract time because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 and its subsections or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 and its subsections or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.2.5 The Contractor may submit requests for information to the Architect through the Construction Manager to help facilitate the Contractor's performance of the Contract. Prior to submitting each request for information, the Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared Coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources.

§ 3.2.6 Each request for information shall be submitted to the Architect through the Construction Manager, in writing, on the form immediately following these Conditions. Each request for information shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 3.2.7 The Contractor shall submit each request for information sufficiently in advance of the date by which such information is required in order to maintain the construction schedule and allow the Architect sufficient time, in the Architect's professional judgment, to permit adequate review and response and to permit Contractor compliance with the latest construction schedule.

§ 3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

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§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor

shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. ~~If the Contractor determines that such~~ Where the Contract Documents refer to particular construction means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner, the Construction Manager, and the Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. The Construction Manager shall review the proposed alternative for sequencing, constructability, and coordination impacts on the other Contractors. Unless the Architect or the Construction Manager objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures or indicate or imply that such are to be used in the Work, such reference is intended only to indicate that the operations of the Contractor shall be such as to produce at least the quality of work implied by the operations described, but the actual determination of whether or not the described operations may be safely and suitably employed on the Work shall be the sole responsibility of the Contractor.

§ 3.3.1.1 The Contractor shall, prior to start of any portion of the Work:

- .1 review any specified construction or installation procedures, including those as may be recommended by the proposed manufacturer(s);
- .2 advise the Architect though the Construction Manager, in writing, if the specified procedure or procedures deviate from good construction practice;
- .3 advise the Architect though the Construction Manager, in writing, if following said procedure or procedures will affect any warranty, including Contractor's general warranty;
- .4 advise the Architect though the Construction Manager, in writing, of any objections the Contractor may have to the specified procedure or procedures;
- .5 propose to the Architect though the Construction Manager, in writing, any alternative procedure or procedures which the Contractor will warrant.

§ 3.3.1.2 All loss, damage, or liability, or cost of correcting defective Work arising from the employment of any construction means, methods, techniques, sequences or procedures shall be borne by the Contractor notwithstanding that such construction means, methods, techniques, sequences or procedures may be referred to, indicated or implied by the Contract Documents; it being understood that in no event shall the Owner, Construction Manager or Architect have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work.

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§ 3.3.4 The Contractor shall inspect all materials as delivered to the premises and shall reject any materials that will not conform to the Contract Documents when properly installed.

§ 3.3.5 The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the Work or Project. Failure to obtain any permits, licenses or other approvals because of the failure of the Contractor to conform to this requirement shall not extend the Contract Time, and the Contractor shall not be entitled to any increase in the Contract Sum therefore. In addition, any additional costs and/or expenses of any nature incurred by the Owner as a result of the Contractor's failure to conform to this requirement shall constitute a charge against the Contractor's Contract.

§ 3.3.6 Contractor shall perform all Work in accordance with all requirements of all federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to the Work.

§ 3.3.7 During periods of active construction, Contractor shall consult daily and cooperate with the Construction Manager, Architect and Owner. On a continuous and daily basis, Contractor shall keep the Construction Manager, Architect and Owner notified of when Work will be starting, restarting, suspended and temporarily or permanently concluding.

§ 3.3.8 Contractor shall attend all meetings, at a minimum on a weekly basis, as required by the Owner and/or the Construction Manager or Architect to be held at a location as may be determined by Construction Manager or Owner. These meetings will be held to arrange for a satisfactory performance of the Work of this Contract and/or the coordination of all Multiple Prime Contractors so as not to impede the progress of the Project. Failure of Contractor to

attend said weekly (at a minimum) meetings shall be deemed a material breach of this Contract. Contractor shall be responsible for all delays and/or expenses incurred for failure to attend meetings and any coordination difficulty.

§ 3.3.9 Contractor shall provide copies of its daily construction reports to the Construction Manager or any other individual so identified by Owner for such purpose. Unless otherwise specified, these reports shall be submitted no later than 10:00 am the following workday. The daily reports shall be for Construction Manager's and Owner's information and provide detailed information as required by the Construction Manager or Owner concerning the Contractor's activities and operations only. If any type of 'daily construction' form is provided by Construction Manager or Owner for purposes of compliance with this section, such form shall be used by Contractor.

§ 3.3.10 Unless otherwise requested by Construction Manager, or specified elsewhere in the Contract Documents, Contractor shall submit two-week look ahead schedules identifying the anticipated activity and material needs for all of the Work scheduled to be performed by the Contractor and its Subcontractors for the identified time period. The Contractor shall keep this schedule current and provide a bi-weekly report to the Construction Manager and Owner concerning the actual performance and activity compared to the two-week look ahead. If a form is provided by Construction Manager for the purpose of compliance with this section, such form shall be used by Contractor.

§ 3.3.11 In addition to the Owner's right to take Work away (set forth in Section 2.4), if Contractor fails to keep the site safe and clean within four (4) hours of being notified by the Construction Manager or Owner, either verbally or in writing, the Construction Manager or Owner may, at Owner's option, have this Work performed and back charged to Contractor at prevailing overtime rates plus 15%. For purposes of this section, notwithstanding anything contained to the contrary in the Contract Documents, verbal notice to field personnel is deemed notice to the Contractor. Owner's rights pursuant to this paragraph shall not give rise to any duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

§ 3.3.12 Contractor shall allow sufficient time to inspect and accept the Work of other Multiple Prime Contractors and Owner's other contractors. Should any discrepancies be discovered, the Contractor shall provide notice to Construction Manager sufficiently in advance so that Construction Manager and Architect may have sufficient time to review same and corrective action can be taken (by all necessary parties) without affecting the progress of any Multiple Prime Contractor or Owner's other contractors or the Work.

§ 3.3.13 Unless otherwise requested by Construction Manager, or specified elsewhere in the Contract Documents, one (1) week after issuance of a Notice to Proceed or commencement of Work, whichever is earlier, Contractor shall provide two (2) copies of a video-taped recording of all existing conditions to the Owner through the Construction Manager. This taping shall provide a record of all relevant existing buildings, grounds, exterior conditions and interior conditions which may be affected by the Work. Contractor shall schedule a representative of both the Owner and the Construction Manager to be present at this taping. In the absence of this record, the Contractor shall be estopped from asserting that any damage to existing conditions/property was to any extent pre-existing when Owner or the Construction Manager asserts that such damage was caused by Contractor.

§ 3.3.14 Contractor must exert **due** care and diligence when working in or near any existing buildings or site work which is to remain. The absence of protection around such items shall not excuse the Contractor from its responsibility to provide protection. Any damages **due to the Contractor's failure to discharge such responsibilities** to the existing buildings, site work or facilities shall be repaired **by the Contractor at its sole cost and expense and if Contractor cannot repair the same, it shall bear the cost thereof.**

§ 3.3.15 All disconnect and/or tie-in Work involving any utilities that would interfere with the ongoing operations of the Owner shall be completed on an after-hours basis at a time that is mutually agreeable to the Owner so as not to impact the Owner's operations. The performance of this Work shall be projected on the required schedules and the Construction Manager, Architect and Owner are to be notified at least forty-eight (48) hours in advance of commencing this Work. All overtime and standby personnel necessary to complete these tie-ins shall be the responsibility of the Contractor.

§ 3.3.16 In the event that Owner makes arrangements to open a building at the request of Contractor and the Contractor does not appear at the designated time and location, the Contractor shall pay the Owner for all costs incurred relating to the opening of said building for Contractor.

§ 3.3.17 Contractor shall provide to Owner and Construction Manager, as either of them may request, copies of all correspondence, memoranda and bulletins to and from the Construction Manager, Architect, Subcontractors, suppliers, public agencies, and others on the Project.

§ 3.3.18 Contractor agrees that it shall not permit any unauthorized persons or entities to visit or enter upon the Project site absent Construction Manager's or Owner's prior approval.

§ 3.3.19 Contractor shall arrange for reasonable protection to secure the Site against theft and vandalism and arrange for reasonable protection of adjoining property in agreement with Construction Manager and owner.

§ 3.3.20 Contractor shall develop methods of dust and fume control **so as to comply with applicable legal requirements.**

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work. The Contractor shall check all materials and labor entering into the Work site and shall keep full detailed accounts thereof.

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§ 3.4.2.1 After the Contract has been executed, the Owner and Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 01 of the Specifications). By making requests for substitutions, the Contractor:

- .1 represents that it has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
- .2 represents that it will provide the same warranty for the substitution as it would have provided for the product specified;
- .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution that subsequently become apparent; and
- .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

§ 3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor for amounts paid to the Architect for reviewing the Contractor's proposed substitutions for convenience after the period noted in Division 01 Section "Substitution Procedures" and making agreed-upon changes in the Drawings and Specifications resulting from such substitutions.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them. The Contractor acknowledges that it is the Contractor's responsibility to hire all personnel for the proper and diligent prosecution of the Work and the Contractor shall maintain labor peace for the duration of the Project. Should any disorderly, incompetent or objectionable person be hired or employed by the Contractor or be let upon or about the premises of the Owner, for any purpose or in any capacity, he/she shall, upon request of the Construction Manager or Owner, be removed from the Project and not again assigned thereto without written permission of the Construction Manager or Owner. In the event of a labor dispute, the Contractor shall not be entitled to any increase in the Contract Sum or extension of the Contract Time.

§ 3.4.3.1 Union Disputes/Labor Harmony

§ 3.4.3.1.1 The Contractor shall employ only labor on the Project or in connection with its Work capable of working harmoniously with all trades, crafts and any other individuals associated with the Work to be performed. There shall be no strikes, picketing, work stoppages, slowdowns or other disruptive activity at the Project for any reason by anyone employed or engaged by the Contractor to perform any portion of its Work. There shall be no lockout at the Project by the Contractor. The Contractor shall be responsible for providing the manpower required to proceed with the Work under any circumstance. Should it become necessary to create a separate entrance for a Contractor involved in a labor dispute, all costs associated with creating that entrance shall be borne by the Contractor involved in the

dispute. Such costs shall include, but not be limited to, signage, fencing, temporary roads and security personnel as deemed necessary by the Owner for the safety of the occupants of the site.

§ 3.4.3.1.2 If Contractor has engaged the services of workers and/or Subcontractors who are members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage or cost to the Owner and without recourse to the Construction Manager, Architect or the Owner, any conflict between its Contract with the Owner and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the Work of any particular trade.

§ 3.4.3.1.3 In case the progress of the Work to be performed by the Contractor is affected by any undue delay in furnishing or installing any items or materials or equipment required pursuant to its agreement with the Owner because of a conflict involving any such labor agreement or regulation, the Owner may require the other material or equipment of equal kind and quality be provided pursuant to a Change Order or Construction Change Directive but in no case shall the amount of such change be charged by the Contractor to the Owner as an additional cost to perform the Work pursuant to its Contract.

§ 3.4.3.1.4 The Contractor shall ensure that its Work continues uninterrupted during the pendency of a labor dispute.

§ 3.4.3.1.5 The Contractor shall be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes.

§ 3.4.4 A sufficient force of competent workers, foremen, and superintendents shall be employed at all times to permit the Work to be pursued with diligence until completion.

§ 3.4.5 No materials or supplies for the Work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale or other arrangement by which an interest is retained by the seller. The Contractor warrants that it has good title to all materials and supplies used by it in the Work, or resold to Owner, pursuant to the Contract Documents, free from all liens, Claims or encumbrances.

§ 3.4.6 Contractor shall comply with the Contract requirements and all applicable federal, state and local laws, including but not limited to provisions of the New York State Labor Law concerning hours of work, prevailing rate of wages (as published by the Bureau of Public Work, State of New York, Department of Labor and as may be included in the Contract Documents), minimum wages, working conditions, prevailing wage enforcement, notices to be posted at the Project site, and employment and payroll records.

§ 3.4.6.1 The Contractor shall maintain in a secure location the original payrolls or transcripts thereof which the Contractor and its Subcontractors are required to maintain pursuant to New York State Labor Law. The Contractor and its Subcontractors shall submit original payrolls or transcripts, subscribed and affirmed by it as true, with each and every Application for Payment. The Contractor and Subcontractors shall produce within five (5) days on the Project site and upon a written order of the Construction Manager, Owner, or relevant legal authority having jurisdiction over the Project or Work, such original payrolls or transcripts thereof, subscribed and affirmed by it as true, and the statements signed by each worker. In addition, the Contractor and its Subcontractors shall furnish to the Construction Manager or Owner upon written demand any other information to satisfy the Construction Manager or Owner that this Section 3.4.6 and the New York Labor Law, as to the hours of employment and rates of wages are being observed. The Contractor shall maintain the payrolls or transcripts thereof for six (6) years from the date of completion of the Work of this Contract.

§ 3.4.6.2 When directed by the Construction Manager or Owner, the Contractor shall provide the Construction Manager with an attendance sheet for each day of which Work is performed on the Project site. Such attendance sheet shall be in a form acceptable to the Construction Manager or Owner and shall provide information for employees of the Contractor and its Subcontractors.

§ 3.4.7 All materials used permanently in the Work shall be new unless otherwise specified. The apparent silence of the Specifications as to any detailed description concerning any Work to be done and materials to be furnished shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the first quality are to be used, and all interpretations of the Specifications shall be made on this basis. All material incorporated in the Project shall be clean and exhibit no appearance of aging, exposure to weather, prior use, handling or damage of any kind.

§ 3.4.8 Manufacturer's identification shall be inconspicuous, but where nameplates contain information relative to

characteristics or maintenance, they shall be clearly visible and located for easy access.

§ 3.4.9 Equipment intended for permanent installation shall not be operated for temporary purposes without the written permission of the Construction Manager and Owner.

§ 3.4.10 Materials shall be delivered in manufacturer's original sealed containers, with complete identification of contents and manufacturer, and kept sealed in original containers until installed/used. Labels shall not be removed until materials have been installed and inspected.

§ 3.4.11 Whenever the Contract Documents require delivery by the Contractor of any materials, equipment, or other items, the term delivery shall be deemed to include unloading and storing with proper protection where directed.

§ 3.4.12 Where material is specified to be furnished by others or furnished and delivered only, the Contractor installing the material shall be responsible for scheduling the delivery and receiving, unloading, storing, handling, relocating, hoisting, distribution, laying out and installing the material.

§ 3.4.15 Contractor shall include in its base price the cost of all rigging and equipment required for the performance and installation of its Work.

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§ 3.5.1 The Contractor warrants to the Owner, Construction Manager, and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. defects. Work, materials, or equipment not conforming to these requirements may will be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Construction Manager or Architect, Manager, Architect, or Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. The warranty provided in this Section 3.5 shall be in addition to and not in limitation of any other warranty required by the Contract Documents or otherwise prescribed by law.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4. warranties and/or guarantees shall include labor and materials and shall be signed by the manufacturer or Subcontractor as the case may be and countersigned by the Contractor. All warranties shall be addressed and assigned to the Owner and delivered to the Construction Manager upon completion of the Work and before the request for Final Payment. Contractor shall perform all Work in such a manner so as to preserve any and all such manufacturers' warranties.

§ 3.5.2.1 The Contractor will exercise its best efforts to service and to enforce for the benefit of Owner all manufacturers' warranties on all materials, equipment and fixtures incorporated into the Work.

§ 3.5.3 The warranties set forth herein shall survive completion, expiration and/or termination of this Contract.

§ 3.5.4 The Contractor will make good at its own cost and expense all defects and all damage caused to the Owner, due to correcting defective Work that is under warranty / guarantee. All corrections to defective Work shall be made at the convenience of the Owner.

§ 3.5.5 The Contractor represents that it is a manufacturer's approved Contractor in connection with the Work and will furnish the manufacturer's warranty to the Owner and Construction Manager.

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The Contractor shall pay sales, consumer, use and similar taxes for the Work or portions thereof provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect. Notwithstanding the preceding, New York State sales tax is not applicable to any

materials and supplies to be incorporated into the Project under the terms of the Contract, the Owner being exempt therefrom. There is no exemption from the sales or use tax on charges to the Contractor by any Subcontractor for the lease of tools, machinery, equipment or other property used in conjunction with the Project. The Contractor and its Subcontractors shall be solely responsible for and pay any and all applicable taxes, including sales and compensation for use taxes, on such leased tools, machinery equipment or other property, and for materials not incorporated in the Project and the amount of such taxes, if any, shall be deemed included in the bid submitted. Upon request, the Owner shall supply to the Contractor, an exemption certificate for such tax.

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§ 3.7.1 Unless otherwise provided in the Contract Documents, the Owner, assisted by the Construction Manager, shall secure and pay for the building permit. The Contractor shall secure and pay for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded. The Owner shall, if same is required, secure and pay for the general building permit from the New York State Education Department only. Without limitation, the mechanical, electrical and plumbing permits, the health and environmental impact fees due to water and sewer connections, if any, and all other fees and permits necessary for the Work of the Project shall be secured and paid for by the individual Prime Contractors. The Contractor, in securing other permits for construction or with regard to any other aspect of the Work which requires a permit, notwithstanding any contrary language in the Contract, shall at its own cost and expense make the necessary arrangements to complete, file and have sealed by a Professional Engineer licensed in the jurisdiction, any and all preliminary affidavits of certification that may be required by the governing agency or agencies having jurisdiction for issuing permits for the Work which are legally required when bids are received, but in any case, prior to starting Work.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. Contractor shall pay any costs or fees incurred in such compliance and any fines or penalties imposed for violation thereof. In addition, Contractor shall to the fullest extent permitted by law indemnify, defend, and hold harmless the Owner, Construction Manager, and Architect (and their employees, officers, and agents) from any resulting fines, penalties, judgments or damages, including reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder) imposed on, or incurred by such indemnified parties due to any such violation (or alleged violation). This provision shall survive the completion or earlier termination of the Contract.

§ 3.7.2.1 The Contractor shall be responsible for and coordinate any and all inspections required by any governmental body having jurisdiction over the Work and secure approval of and comply with requirements of all such authorities and deliver certificates of approval to the Construction Manager and Owner, and shall prepare all documents, including drawings, necessary to secure such approval.

§ 3.7.2.2 In accordance New York State Labor Law Article 8, Section 220, subd. 3-a(a), the Contractor shall submit to the Owner within 30 days after issuance of Contractor's first payroll, and every 30 days thereafter, a transcript of the original payroll record, subscribed and affirmed as true under the penalties of perjury.

§ 3.7.2.3 The Contractor shall comply with all applicable New York State Department of Labor requirements, including the provision that every worker employed in performance of a public work contract shall be certified as having completed an OSHA 10-hour safety training course. The Contractor and subcontractor shall be solely responsible for compliance with this requirement with respect to their employees. The Contractor's or subcontractor's failure to comply with this requirement shall not transfer or in any way impose the responsibility for worker safety upon the Owner or the Architect.

§ 3.7.2.4 Certificate of Occupancy:

- .1 It shall be the responsibility of the Contractor to obtain all necessary approvals and releases from governing agencies having jurisdiction and to satisfy all requirements for the issuance and obtaining of any required certificates of occupancy.
- .2 At such time as the Contractor makes application for any required certificate of occupancy, it shall, at its

own cost and expense, file and have sealed by a Professional Engineer licensed in the jurisdiction, the final affidavit(s) of certification that the Project has been constructed in conformance with filed documents, ordinances, rules and regulations and such other data that may be required by the governing agency or agencies having jurisdiction over this Project.

.3 Said certificate (if required for the Work of the Project) shall be turned over to the Construction Manager and Architect prior to certification of Final Payment and in conjunction with same.

§ 3.7.3 If the Contractor performs Work ~~knowing~~ where it knows or should have known it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction. It shall be the obligation of the Contractor to review the Contract Documents to determine and to notify the Construction Manager and the Architect of any discrepancies between building codes and regulations of which the Contractor has knowledge or should be reasonably able to determine.

§ 3.7.4 Concealed or Unknown Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner, Construction Manager, and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect and Construction Manager will promptly investigate such conditions and, if the Architect, in consultation with the Construction Manager, determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect, in consultation with the Construction Manager, determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner, Construction Manager, and Contractor, stating the reasons. If the ~~Owner or~~ Contractor disputes the Architect's determination or recommendation, ~~either party~~ the Contractor may submit a Claim as provided in and subject to Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner, Construction Manager, and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests/Claims for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in and subject to Article 15.

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§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may ~~direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.~~ direct.

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- ~~.1 allowances~~ Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- ~~.2 Lump Sum Allowances, Unit Cost Allowances and Quantity Allowances:~~ Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances;
- ~~.3 Contingency Allowances:~~ Contractor's costs, including all such subcontractor costs, for receiving and handling at Project site, labor, installation, and similar costs related to products and materials under allowance shall be included as part of the allowance. Contractor, and subcontractor, Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance; and

- ~~3~~ ~~Whenever~~ ~~4~~ Whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.
- ~~5~~ The Architect shall create and process Allowance Access Authorizations for the Construction Manager and Owner's approval and execution in accordance with the Contract Documents.

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§ 3.8.4 Refer to Division 01 Section "Allowances" for additional information.

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who assistants. Prior to starting the Work, the Contractor shall designate the project manager, superintendent and other key individuals who shall be assigned to the Project through and including final completion. Such designation shall be in writing and provided to the Construction Manager, Architect and Owner. The superintendent shall be in attendance at the Project site during performance of the Work, throughout performance of the Work, including full completion of the punch list. The superintendent shall not be employed or used on any other project during the course of the Work. The superintendent shall be subject to approval by the Owner in its sole discretion. Said superintendent shall be qualified in the type of Work to be undertaken and shall not be changed during the course of construction without the prior written consent of the Owner in its discretion. Should the superintendent leave the Contractor's employ, Contractor shall promptly designate a new superintendent. Owner shall have the right, at any time, to direct a change in the Contractor's superintendent or any of its representatives if their performance is unsatisfactory in the determination of Owner in its discretion. In the event of such demand, Contractor shall, within five (5) days after delivery of notification thereof, replace said individuals(s) with an individual satisfactory to Owner. . The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. The Owner shall have no obligation to direct or monitor the Contractor's employees. All references herein to the superintendent shall be taken to mean the Contractor's superintending staff. All substantive communications from Contractor to Construction Manager, Architect or Owner shall be made and/or confirmed in writing by Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect, through the Construction Manager, of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor, stating whether the Owner, the Construction Manager, or the Architect (1) has reasonable objection to the proposed superintendent or (2) require additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection. Contractor shall coordinate and supervise the work performed by Subcontractors so that the work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the work. The Contractor and all Subcontractors shall afford each trade reasonable opportunity for the installation of their work and the storage of their materials.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner, Construction Manager, or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed. It is required of any and all supervisory personnel proposed for use by any Contractor that said personnel be versed in the written and spoken English language or, said Contractor shall furnish a full-time on-site interpreter to facilitate communications between the Owner's Representative, Construction Manager and the Architect.

§ 3.9.4 Contractor shall furnish the Owner's Representative in writing the names, addresses and telephone numbers of the members of his organization who can be contacted in the event of an off-hours emergency at the building site.

§ 3.9.5 The Contractor shall attend progress meetings with the Owner's Representative and such other persons the Owner may wish to have present. The progress meetings shall include all key personnel on the job, including the Contractor and Subcontractors, or other persons in charge of various phases of the work.

§ 3.10 Contractor's Construction and Submittal Schedules Contractor's Construction Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information, and the Construction Manager's use in developing the Project schedule, approval, a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project,

including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project, and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work. The Contractor shall cooperate with the Construction Manager in scheduling and performing the Contractor's Work to avoid conflict with, and as to cause no delay in, the work or activities of other Contractors, or the construction or operations of the Owner's own forces or Separate Contractors' forces.

§ 3.10.1.1 Submission of an accepted Construction Schedule shall be a prerequisite to initial payment. If the schedule is not submitted by said dates the Contractor has acknowledged his approving the Owner to complete a schedule for the Contractor. Such schedule will become the product and ownership of the Contractor and the Contractor will be back-charged all costs pertaining to the service of producing the schedule. The Contractor shall provide revised schedules at appropriate intervals as required by the Conditions of the Work and Project.

§ 3.10.1.2 Revisions to the schedule shall be approved by the Owner.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Construction Manager's and Architect's approval. The Architect and Construction Manager's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Construction Manager and Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals. Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the Project schedule.

§ 3.10.3 The Contractor shall participate with other Contractors, the Construction Manager, and the Owner in reviewing and coordinating all schedules for incorporation into the Project schedule that is prepared by the Construction Manager. The Contractor shall make revisions to the construction schedule and submittal schedule as deemed necessary by the Construction Manager to conform to the perform the Work in accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule.

§ 3.10.4 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner, Construction Manager, and Architect, and incorporated into the approved Project schedule. Submittals for all long lead time items shall be provided to the Construction Manager and Architect within ten (10) days of Board of Education approval of bid/contract.

§ 3.10.5 The Contractor shall be responsible for coordinating and expediting its fabrication and delivery schedules and keeping the Construction Manager, Architect and Owner informed as to its progress and its anticipated ability to stay on schedule. The Contractor shall monitor the progress of the Work for conformance with the Project Schedule and shall promptly advise Construction Manager and Owner of any delays or potential delays. Contractor shall update and coordinate its construction schedule with the Project Schedule once a month or more frequently if requested.

§ 3.10.5.1 Without limitation to Section 3.10.5 above, the Contractor shall submit progress/status reports on fabrication on long lead items (items requiring four (4) weeks and over to fabricate) to the Construction Manager, Architect and Owner every week.

§ 3.10.6 The Contractor shall schedule, coordinate and perform its Work, in cooperation with the Construction Manager, Architect and Owner, so as to avoid conflict, delay in, or interference with the Work of other Multiple Prime Contractors or operations of the Owner's own forces. The Contractor is solely responsible for the accuracy and adequacy of the scheduling information it provides to the Construction Manager, Architect and Owner as necessary for preparation of the overall Project Schedule; therefore, the Contractor is solely responsible for the accuracy and

adequacy of the Project Schedule (or its updates) as it pertains to the Contractor's Work.

§ 3.10.7 TIME IS OF THE ESSENCE to the Owner for the Contractor's completion of its Work and completion of the Project. Accordingly, the Contractor shall prosecute the Work diligently, using such means and methods of construction in accord with the requirements of this Contract and as will assure its completion not later than the date specified in the Contract Documents (or on the date to which time for completion may be extended only as consistent with the terms of this Contract).

§ 3.10.8 The Contractor shall include in its base price, all out of sequence Work and any Work required to be performed during overtime hours or non-working hours necessary to maintain the Project Schedule or any separate Owner's move-in schedule.

§ 3.10.9 The Owner shall have the right to direct a postponement or rescheduling of any date or time for the performance of any part of the Work that may interfere with the operation of the Owner's premises or any tenants or invitees thereof. The Contractor shall, upon the Owner's request, reschedule any portion of the Work affecting operation of the premises during hours when the premises are not in operation. Any postponement, rescheduling or performance of the Work under this Section 3.10.9 may be grounds for an extension of the Contract Time, if permitted and subject to all provisions relating to such, so long as additionally: (1) the performance of the Work postponed or rescheduled was originally properly scheduled by the Contractor in compliance with the requirements of the Contract Documents and (2) such rescheduling or postponement is required so there is no disruption of the Owner's normal operations, including no disruption to instructional delivery resulting from construction.

§ 3.10.10 If the Contractor shall fail to adhere to the approved Project Schedule, it shall (at no additional cost to Owner) promptly adopt such other means and methods of construction as will make up for the time lost and will assure completion in accordance with the approved Project Schedule.

§ 3.10.11 When the Contract Documents use the term "coordinate" and "coordination" in relation to the Contractor, those terms shall refer to the obligation of the Contractor to plan and direct its Work in cooperation and coordination with other Multiple Prime Contractors and with Owner's own forces at all times when the Work of the Contractor or its Subcontractors overlaps or dovetails with other work at the site, to the end that the overall Project Work is carried out continuously, in an efficient, workmanlike manner, without conflict between any trades, and so that no trade, at any time, causes delay to the general progress of the Work.

§ 3.10.12 The scheduling and coordination obligations of Construction Manager under this Contract are for the sole benefit of the Owner, and are not intended to create any rights whatsoever in favor of Contractor. The Contractor shall not have any Claim whatsoever against the Owner or Construction Manager or Architect arising out of any alleged neglect or failure on the part of Owner or Construction Manager or Architect to schedule or coordinate the Work of the Contractor.

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The Contractor shall make available, at the Project site, the Contract Documents, including maintain, at the Project site, for the Owner, in addition to the Project Record copy held by the Construction Manager, one copy of the Drawings, Specifications, Addenda, Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Construction Manager, documents shall be available to the Architect, and Owner, and delivered to the Construction Manager for submittal to the Owner upon completion of the Work as a record of the Work as constructed, constructed, and signed by the Contractor, certifying that they show complete exact "as-built" conditions, stating sizes, kind of materials, vital piping, conduit locations and similar matters. Project Record Documents are hereby made part of this paragraph.

§ 3.11.1.1 Each Prime Contractor shall provide a copy of daily field reports to the Construction Manager at the end of each week.

§ 3.11.1.2 The Contractor shall maintain at the Project site, and shall make available to Owner and Architect, one record copy of the Drawings (the "Record Drawings") in good order.

§ 3.11.1.3 The Record Drawings shall be prepared and updated during the prosecution of the Work.

§ 3.11.1.4 Final payment and any retainage shall not be due and owing to Contractor until the Drawings receive the approval from the Architect and the Owner (and all other close-out requirements are met).

§ 3.11.1.5 The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to government inspectors and other authorized agencies. All approved Drawings shall be wrapped, marked and delivered to the Owner within thirty (30) days of final completion of the Work.

§ 3.11.2 The Contractor shall maintain current at the site at least one (1) set of record Contract Drawings on which shall be shown in a neat and accurate manner the actual installation of the Work, indicating thereon any variations from the Contract Drawings. Changes, whether resulting from formal Change Orders, Construction Change Directives, or other instructions issued by the Construction Manager or Architect, shall be recorded and shall include without limitation change in sizes, grades, locations and dimensions, and substituted materials.

§ 3.11.2.1 This process shall incorporate both the changes noted above and all other deviations from the original Drawings, whether resulting from Project conditions encountered for from any other cause. Principal dimensions of concealed work shall be recorded.

§ 3.11.2.2 At the completion of the Project, these prints shall be submitted to the Construction Manager for Architect's final inspection and comment. The Contractor shall revise these drawings as required by Architect for legibility and accuracy, and they shall be submitted to Construction Manager and Architect for Owner's records. This shall also include an electronic copy of all such documents transmitted to the Construction Manager for the Owner.

§ 3.11.3 The Contractor shall prepare and maintain signed daily logs and reports containing among other things: the Contractor's employees at the site; the Subcontractors at the site and number of employees of each; the general work (and location of same) performed by Contractor and/or Subcontractors; temperature and weather conditions; and description in reasonable detail of any extraordinary or special occurrences or problems encountered and other similar relevant data as Construction Manager or Owner may reasonably require. Contractor shall make all such logs and reports available to Construction Manager and Owner at all times and shall immediately deliver copies of such to Construction Manager and Owner promptly upon request.

§ 3.11.4 The Contractor shall maintain on site and shall provide to Construction Manager and Owner, as Construction Manager or Owner may request, copies of all correspondence, memoranda and bulletins and other like documents to and from the Construction Manager, Architect, consultants, Subcontractors, suppliers, public agencies, and others on or relating to the Work of this Contract.

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§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work. "Shop Drawings" as used herein includes fabrication, erection, layout and setting drawings; manufacturers' standard drawings; samples; schedules; descriptive literature, catalogs and brochures; performance and test data; calculations; wiring and control diagrams; all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems and methods of construction as may be required to show that the materials, equipment or systems and the position thereof conform to the Contract Documents. Shop Drawings shall establish the actual detail of all manufactured or fabricated items; indicate proper relation to adjoining Work; amplify design details of mechanical and electrical equipment in proper relation to physical spaces in the structure; and incorporate minor changes of construction to suit actual conditions. One complete set of all product data and approved Shop Drawings shall be submitted to the Owner as part of the close-out requirements

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§ 3.12.3.1 The Contractor shall submit for review to the Architect through the Construction Manager samples of materials listed under each section of the Specifications. Samples shall be properly labeled for identification, consisting of the following: job titles, sample number, submission number, and label large enough to receive Architect's stamps.

§ 3.12.3.2 The Contractor shall not commence work under sections of the specifications until the Architect's approval in writing is obtained for all listed samples.

§ 3.12.3.3 The Contractor shall not construe approval of advance samples as total guarantee of acceptance of materials. Materials will be subjected to field inspections, from time to time, as work progresses.

§ 3.12.3.4 Samples of specific manufactured products shall be accompanied with appropriate manufacturer's literature at time of submission.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Construction Manager, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the Project submittal schedule approved by the Construction Manager and Architect or, in the absence of an approved Project submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of other Contractors, Separate Contractors, or the Owner's own forces. The Contractor shall cooperate with the Construction Manager in the coordination of the Contractor's Shop Drawings, Product Data, Samples, and similar submittals with related documents submitted by other Contractors. Contractor shall review all submissions for completeness. Contractor is responsible to stamp all Shop Drawings prior to submission to the Construction Manager and Architect. All information requested in the Contract Documents or otherwise by the Construction Manager or Architect shall be provided by Contractor in the form and following such procedures prescribed by the Construction Manager and the Architect. Submittals/ Shop Drawings will be returned without review if the information is not provided as required or if procedures as prescribed are not followed to the Construction Manager's or Architect's satisfaction.

§ 3.12.5.1 Contractor shall generate a complete "Submittal Log" within one (1) calendar week of issuance of a Notice to Proceed or commencement of Work, whichever is earlier. This log shall list all required submittals specific to the trade as detailed in the Project Manual/Specifications. If Construction Manager provides a form for compliance with the terms of this Section, such form shall be used by Contractor.

§ 3.12.5.2 All submissions shall be sent to the Construction Manager and Architect by any method required by Construction Manager and Architect for such submission.

§ 3.12.5.3 Contractor shall provide one transmittal for each submission package identifying each unique submission individually. For each submittal with the submission package, the Contractor shall identify the length of the delivery time and the necessary "last date" an item may be received on site. Contractor shall keep a log of all of its submissions in a manner reasonably prescribed by the Construction Manager and Architect.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner, Construction Manager, and Architect, that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. The Architect's review of such Shop Drawing and submittals is for the purpose of checking for conformance with information given and the design concept expressed in the Contract Documents; and not for the purpose of determining the accuracy and completeness of details such as field/site dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of its obligations under the Contract Documents. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been reviewed and approved by the Architect. The Contractor shall be responsible for all cost and expense relating to any work performed by it in violation of this Section.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Construction Manager and Architect in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

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§ 3.12.11 Contractor is responsible for providing any required mock-ups required by the Contract Documents out of sequence as needed for the Project.

§ 3.12.14 The Contractor is required to provide all submittals for the Architect's review; all submittals to be provided to the Architect by the Submittal deadlines noted in the Contract Documents. The Architect's review of Contractor's submittals will be limited to the time preceding the Submittal deadline and will consist of an examination of an initial submittal and two (2) resubmittals. The Owner is entitled to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of additional resubmittals, and for evaluation of submittals for which the initial submission is received after the Submittal deadlines.

§ 3.13.1 The Contractor shall have limited access to the site on the inside and outside of the Buildings. The Contractor shall confine operations at the site to areas designated by the Owner or Construction Manager, and permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.13.1.1 The Owner's Representative shall establish the limits of the construction site in addition to any contract limit lines shown on the Drawings. The Contractor shall continue his operations within these limits, unless upon written request and reply, a variance is agreed to by the Construction Manager and the Owner. The Contractor shall be responsible for trespassing on and/or damage to other property by any of his employees or his subcontractors' employees.

§ 3.13.1.2 The Contractor's right to entry and use thereof arises solely from the permission granted by the Owner under the Contract Documents.

§ 3.13.1.3 The Contractor shall be required to perform the work of the Project with no interruption to the Owner's operations. Any work which will interfere with the Owner's operations shall be performed on evenings and weekends when the Owner's facilities are not in operation. All costs incurred by the Owner to make the facilities available during those times shall be borne by the Contractor. The Owner reserves to itself the right to determine what work will "interfere" with its operations and said determination shall be final.

§ 3.13.2 The Contractor shall coordinate the Contractor's operations with, and secure the approval of, the Construction Manager before using any portion of the site. Field personnel shall be confined to the Work area assigned.

§ 3.13.3 The Contractor shall be responsible for enforcing the Owner's security and access policies and procedures and the following rules of conduct for its personnel and those of its subcontractors, sub-subcontractors, and suppliers at the Project site, and the Owner's Project Representative shall provide interpretations should a question arise if the rules of conduct are being adequately enforced by the Contractor:

.1 No smoking, vaping, or use of tobacco products on school grounds and within 100 feet of the boundary of any school building.

.2 No drinking of alcoholic beverages, ingesting of anything with THC, marijuana, CBD, CBG, etc. or use of controlled substances. Any use of marijuana in any form on school grounds is strictly prohibited.

.3 No working, or presence on site, under the influence of alcoholic beverages or controlled substances (including prescription medication).

.4 No use of indecent, discriminatory, or vulgar language or display of indecent, discriminatory or vulgar images, publications or terms.

.5 No use of radios or other entertainment devices.

.6 No horseplay or dangerous behavior.

.7 No firearms or other weapons.

.8 No communication with staff or students.

§ 3.13.4 The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes.

§ 3.13.5 Unless otherwise specified in the Contract Documents, Contractor is responsible for its own storage and personnel trailers at the site, and Contractor will be required to supply trailers and storage as required. All costs related to delivery, construction, protection, power, etc. shall be borne by the Contractor. The placement of trailers will be strictly limited to predetermined locations. Approval of the placement of any trailer or storage box must be received from the Construction Manager and contained within the fence of the construction site.

§ 3.13.5.1 Only materials and equipment which are to be used directly in the Work shall be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it must be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is solely the responsibility of the Contractor. The Contractor shall confine its use of the premises, for all purposes, to the areas occupied by the construction and related storage areas as and if shown.

§ 3.13.6 The Contractor shall provide all required temporary access walkways, both interior and exterior, temporary partitioning and the like necessary to complete all operations.

§ 3.13.7 The Contractor shall maintain unobstructed entrance to and/or exit from the site. All Contractor's Work areas shall be kept clean each day of refuse. Contractor shall schedule its Work so as not to interfere with any traffic to and from the required areas of use. Contractor shall be responsible for maintaining all traffic and shall provide all required barriers and protection as required to safeguard the Work and the public and the occupants of the building during Construction.

§ 3.13.8 Contractor, its Subcontractors, workers, suppliers, etc., will be held to adhere strictly to all Owner requirements and shall not occupy or carry on traffic through other parts of the site or interior of present buildings, except by specific permission from the Owner.

§ 3.13.9 The Contractor shall repair or replace any existing trees, shrubbery or other plantings damaged by operations and/or workers employed in performance of the Contract.

§ 3.13.10 During the whole course of the Work, the Contractor shall conduct its Work and operations as to interfere with traffic near the Work as little as possible and effect by every reasonable means the safety and comfort of pedestrians, vehicles and vehicle passengers near the Work.

§ 3.13.11 Employees, vehicles, equipment and material of Contractor and of all others utilized by the Contractor for the performance of its Work shall enter onto the construction site only at those locations designated or approved by the Owner as made known by Construction Manager. Contractor arrival and departure must be prior to student/staff morning arrival or after bus dismissal.

§ 3.13.12 Contractor shall familiarize itself with all access and storage requirements and shall be subject to the same. Contractor shall properly maintain all access to Work and storage areas so that there will be continuous unimpeded access to the Work site in all seasons of the year, on all regular working days and during all regular working hours of any and all trades employed by any Contractor during Work at the site.

§ 3.13.13 Only such vehicles, trucks and equipment shall be parked or stored within the Work area as are absolutely necessary for performing the Work, for the length of time that a particular phase of Work is performed. ALL OTHER CONTRACTOR'S VEHICLES AND/OR EMPLOYEES' AND/OR WORKERS' VEHICLES, INCLUDING PASSENGER CARS, SHALL BE PARKED OFF THE SITE IN A MANNER THAT DOES NOT CREATE A NUISANCE FOR NEIGHBORING RESIDENCES.

§ 3.13.14 The Contractor and any entity for which the Contractor is responsible shall not erect any sign on the Project site without the written consent of the Owner, which may be withheld in the sole discretion of Owner.

§ 3.13.15 Without prior approval of the Owner, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the Owner. Without limitation of any other provision of the Contract documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the Owner in connection with the use and occupancy of the Project site and the building as amended from time to time. The Contractor shall immediately notify the Owner in writing if during the performance of the Work the Contractor finds compliance with any portion of the rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The Owner may, in the Owner's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements and collective bargaining agreements applicable to use and occupancy of the Project site and the Building.

§ 3.13.16 The Contractor shall provide full and free access for the Architect, Construction Manager, Owner and/or their representatives, to inspect job materials, equipment, fabrication, facilities, and storage locations, at and away from the Project site.

§ 3.13.17 SECURITY:

§ 3.13.17.1 It will be the responsibility of the Contractor to provide necessary and required security measures to adequately safeguard the construction site from vandalism and intrusion of unauthorized persons.

§ 3.13.17.2 The Contractor shall submit the means and methods of security to the Owner through the Construction Manager. The Project site must be secured 24 hours a day, seven (7) days a week, including all holidays.

§ 3.13.17.3 All workpersons and employees of Contractor are prohibited from:

- .1 Trespassing or leaving any vehicle on any property not assigned by the Owner as set aside for the use of the Contractor.
- .2 Leaving any vehicle on the grounds unless it is locked, and the ignition keys are removed.

§ 3.13.17.4 All employees or persons entering upon the property surrounding the facilities affected by the construction are restricted to the immediate area of Work. Only persons having official business will be admitted to the construction site.

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§ 3.14.3 Only trades persons skilled and experienced in cutting and patching shall perform such work.

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project. Project, and shall leave the entire area clean or its equivalent.

§ 3.15.1.1 The Contractor shall broom sweep all construction areas every day. The Construction Manager or Owner may perform an inspection each afternoon to determine that the Work areas of the Contractor have been properly cleaned.

§ 3.15.1.2 All Contractor's work areas shall be kept clean each day, of refuse, including containers, cups and the like. The facilities will remain in operation during the course of the entire construction operation. All Contractors performing work on this Contract shall schedule their work so as not to interfere with any traffic to and from the required areas of use. The Contractor shall be responsible for maintaining all traffic, and shall provide all barriers and protection as required to safeguard the work and the public and the occupants of the building during construction. The Prime Contractors shall comply with all state and local fire code regulations during construction. They include vehicular parking, smoke partitions, rescue window obstructions, use of extension cords. .

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner, or Construction Manager with the Owner's approval, may do so without notification to the Contractor and the Owner shall be entitled

to reimbursement from the Contractor, the Contractor including reimbursement for the cost of the time of any custodial staff of Owner or cleaning contractors utilized for cleaning up.

§ 3.15.3 All debris required to be removed from the Project shall be removed in accordance with all applicable federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities as they apply to such. The Contractor shall warrant that all debris shall be disposed of in accordance with all such applicable statutes, laws, codes, ordinances, regulations, rules, and lawful orders and at a facility permitted and authorized to receive materials of the type and nature so removed from the premises. To the fullest extent permitted by law, Contractor shall defend, indemnify and hold harmless the Owner, Architect and Construction Manager, from any claims, damages, losses and expenses, including, without limitation, attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder) of every kind character and nature whatsoever, arising out of or relating to Contractor's violation of this section but only to the extent caused by the negligent acts or omissions of the Contractor, any of its Subcontractors, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this section. The obligations of this section shall survive the completion of the Contract or its earlier expiration or termination.

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§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Construction Manager, Architect, Construction Manager's and Architect's consultants, and Board of Education, officers, agents and employees of any of them from and against claims, damages, losses, liabilities, demands, causes of action, judgments and expenses, including but not limited to attorneys' fees, arising out of or resulting attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), of every kind and character that are caused by, attributable to, arising out of or resulting from, in whole or in part, from performance of the Work, provided that such claim, damage, loss, liability, demand, cause of action, judgment or expense is attributable to (i) bodily injury, sickness, disease or death, or to injury to or (ii) destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, liable (an "Indemnified Claims"), regardless of whether or not such claim, damage, loss, or expense indemnified claim, is caused in part by a party indemnified hereunder. Such obligation shall party indemnified hereunder or whether contractual liability for indemnity or liability without fault is sought to be imposed on the Owner or any other party indemnified hereunder. Notwithstanding the preceding, it is further agreed that notwithstanding any provision to the contrary in this section or anywhere else within this Contract or otherwise in the Contract Documents, all of the defense and indemnification and hold harmless obligations herein are subject and subordinate to the limitations of any applicable laws of the State of New York and in no event shall Contractor nor any other party be required to defend or indemnify any person in violation of such applicable laws. It is further understood that in the event that a court of competent jurisdiction determines that any of the indemnification obligations hereunder are unenforceable in whole or in part, Contractor's obligation to indemnify shall be replaced with the strictest enforceable indemnification provision allowable by such laws. The Contractor's obligations hereunder shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

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§ 3.18.3 The obligations contained in this Section 3.18 shall survive the completion or earlier expiration or termination of this Contract.

§ 3.19 Without limiting Section 3.18 above, the Contractor shall additionally, to the fullest extent permitted by law, indemnify and hold harmless the Owner and its board of education, Construction Manager, Architect, Construction Manager's and Architect's consultants, and, board members, officers, agents and employees of any of them from and against any and all claims, damages, losses, liabilities, demands, causes of action, judgments or expenses including but not limited to attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), of every kind and character that are caused by, attributable to, arise out of or result from or are in any way

connected, in whole or in part, to Contractor's violation (or alleged violation) of any laws or regulations applicable to the Contractor's Work but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable.

§ 3.19.1 The obligations contained in this Section 3.19 shall survive the completion or earlier expiration or termination of this Contract.

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§ 4.1.3 Duties, responsibilities, and limitations of authority of the Construction Manager and Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Construction Manager, Architect, and Contractor, and Architect. Consent shall not be unreasonably withheld.

...

§ 4.2.1 The Without limiting the Architect's and/or Construction Manager's responsibilities and obligations to the Owner as set forth in their respective agreements with the Owner, the Construction Manager and Architect will provide administration of the Contract as described in the Contract Documents and will be the Owner's representatives during construction until the date the Architect issues the final Certificate for Payment. The Construction Manager and Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The For the benefit of Owner only, and not Contractor, the Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents. On the basis of the site visits, the Architect will keep the Owner and the Construction Manager reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner and Construction Manager known deviations from the Contract Documents and defects and deficiencies observed in the Work.

§ 4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor, failure to maintain the Project Schedule or for defects and deficiencies in the Work. The Owner may seek reimbursement pursuant to the procedures set forth in these General Conditions.

§ 4.2.2.2 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Construction Manager for site visits made necessary by the fault of the Contractor, failure to maintain the Project Schedule or for defects and deficiencies in the Work. The Owner may seek reimbursement pursuant to the procedures set forth in these General Conditions.

§ 4.2.3 The Construction Manager shall provide one or more representatives who shall be in attendance at the Project site whenever the Work is being performed. The For the benefit of the Owner only, and not the Contractor, the Construction Manager will determine in general if the Work observed is being performed in accordance with the Contract Documents, will keep the Owner and Architect reasonably informed of the progress of the Work, and will promptly report to the Owner and Architect known deviations from the Contract Documents and the most recent Project schedule, and defects and deficiencies observed in the Work. This shall not be deemed as any type of limitation on the Construction Manager's responsibilities and obligations to the Owner as set forth in its agreement with the Owner.

...

§ 4.2.6 Communications. The Owner shall communicate with the Contractor and the Construction Manager's consultants through the Construction Manager Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Contractor shall endeavor to communicate with the Owner through the Construction Manager and shall contemporaneously provide the same communications to the Architect about matters arising out of or relating to the

~~Contract Documents. The Owner and Construction Manager shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Construction Manager otherwise relating to the Project. Communications Documents or the architects services or professional responsibilities . In no circumstances shall the Contractor communicate with Owner's staff other than those expressly authorized. The Owner may generally communicate with the Contractor through the Construction Manager, but there shall be no limitation on Owner's right to directly communication with Contractor. When Contractor responds to Owner following a direct communication from Owner to Contractor, Contractor shall contemporaneously provide a copy of the same communications to the Construction Manager. Contractor's communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with other material suppliers shall generally be through the Contractor, but there shall be no limitation on Construction Manager's, Owner's, and Architect's right to directly communication with Subcontractors and material suppliers as they deem necessary in their discretion. Contractor's communications by and with other Multiple Prime Contractors shall be through the Construction Manager. Communications Manager and shall be contemporaneously provided to the Architect if those communications are about matters arising out of or related to the Contract Documents. Contractor's communications by and with the Owner's own forces and Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.~~

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§ 4.2.8 ~~The Architect and Construction Manager have authority to reject Work that does not conform to the Contract Documents, Documents and will notify each other about the rejection. The Construction Manager shall, for the benefit of the Owner only, determine in general whether the Work of the Contractor is being performed in accordance with the requirements of the Contract Documents and notify the Owner, Contractor and Architect of defects and deficiencies in the Work. Whenever the Construction Manager considers it necessary or advisable, the Construction Manager will have authority to require additional inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, 13.5.2 and 13.5.3, upon written authorization of the Owner, whether or not the such Work is fabricated, installed or completed. The foregoing authority of the Construction Manager will be subject to the provisions of Sections 4.2.18 through 4.2.20 inclusive, with respect to interpretations and decisions of the Architect. However, neither the Architect's nor the Construction Manager's authority to act under this Section 4.2.8 nor a decision made by either of them in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect or the Construction Manager to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons performing any of the Work.~~

...

§ 4.2.11 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Upon the Architect's completed review, the Architect shall transmit its submittal review to the Construction Manager.

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§ 4.2.13 ~~The Construction Manager will prepare Change Orders and Construction Change Directives. Architect will prepare Change Orders, Construction Change Directives and Allowance Change Authorizations.~~

...

§ 4.2.17 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of the Project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents. The Owner shall notify the Construction Manager of any change in the duties, responsibilities and limitations of authority of the Project representatives.

...

§ 4.2.19 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by ~~both Owner and Contractor, will not show partiality to either, the Contractor,~~ and will not be liable for results of interpretations or decisions so rendered in good faith.

...

§ 4.2.21 The Construction Manager will receive and review requests for information (RFIs) from the Contractor, and forward each request for information to the Architect, with the Construction Manager's recommendation. The Architect will review and respond in writing, through the Construction Manager, to requests for information about the Contract Documents. The Construction Manager's recommendation and the Architect's response to each request will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

§ 4.2.21.1 Prior to submitting each RFI, Contractor shall first carefully study and compare the Contract Documents, field conditions, other Owner provided information, Contractor prepared coordination Drawings, and prior Project correspondence and documentation to determine that the information to be requested is not reasonably obtainable from such sources. Each RFI shall identify the specific sources which were reviewed by the Contractor in an effort to determine the information requested, and a statement to the effect that the information being requested could not be determined from such sources.

§ 4.2.21.3 The Contractor shall reimburse the Owner amounts charged to the Owner by the Architect for responding to Contractor requests for information where such information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner provided information, Contractor prepared coordination Drawings, or prior Project correspondence or documentation.

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§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the ~~site, site or to otherwise furnish labor, material or other services with respect to a portion of the Work, and includes, but is not limited to, Specialists, Specialty Contractor, and Trade Subcontractors..~~ The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include ~~other Contractors or Separate Contractors or the subcontractors of other Contractors or Separate Contractors.~~

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the ~~site, site or to otherwise furnish labor, material or other services with respect to a portion of the Work.~~ The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.1.3 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Construction Manager the names of the Subcontractors or suppliers for each of the principal portions of the Work. The Contractor shall not contract with any Subcontractor or supplier to whom the Owner or Construction Manager or Architect has made reasonable written objection after receipt of the Contractor's list of Subcontractors and suppliers. The Contractor shall propose another Subcontractor to whom the Owner, Construction Manager and Architect have no reasonable objections. No increase in the Contract Sum or extension of the Contract Time shall be allowed where a Subcontractor is rejected by the Owner, Construction Manager or Architect who is deemed unqualified to perform the particular work subcontracted by the Contractor or otherwise not responsible, or having too many current projects handled by insufficient personnel.

§ 5.1.4 All Subcontractors of any tier or specialty are required to be bound by and comply with the Project Labor Agreement annexed to and made a part of these Conditions. All Subcontractors of any tier or specialty are required.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall notify in writing the Construction Manager, for review by the Owner, Construction Manager and Architect, of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. design for each principal portion of the Work. Within 14 days of receipt of the information, the Construction Manager may notify the Contractor whether the Owner, the Construction Manager or the Architect (1) has reasonable objection to any such proposed person or entity or, (2) requires additional time for review. Failure of the Construction Manager to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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§ 5.2.5 The Contractor shall perform at least twenty (20%) percent of the cost of the Contract (not including the costs of materials, insurance, bonds, submittals and similar items) with its own employees.

...

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 pursuant to Article 14 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; Contractor in writing; and

...

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract. the subcontract from and after the date on which Owner determines to accept any subcontract agreements(s). All sums due and owing by Contractor to any Subcontractor(s) and/or supplier(s) for Work performed or material supplied prior to the date of Owner's election to accept assignment of such subcontract agreement(s) and/or purchase order(s) shall constitute a debt between such Subcontractor(s)/material supplier(s) and Contractor. Contractor shall deliver acknowledgment in form and substance satisfactory to Owner from each of its Subcontractors and suppliers of the contingent assignment described herein whenever requested by Owner in writing.

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§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor Contractor or other entity. If the Owner assigns the subcontract to a successor Contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor Contractor's obligations under the subcontract. entity

...

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract forces which include persons or entities under separate contracts not administered by the Construction Manager, and to award other contracts in connection with other portions of the Project or other construction or operations on the site under Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner's own forces or by other Prime Contractors, the Contractor shall make such Claim as provided in Article 15.

§ 6.1.1.1 Should the Contractor sustain any damage or delay through any act or omission of any other Contractor having a contract with the Owner for the delivery of materials, supplies, equipment, plant or appliances, or should the Contractor sustain any damage or delay through any act or omission of a Subcontractor, the Contract shall have no

claim against the Owner or their Architects for such damage or delay but shall have a right to recover or to claim damage only from the other Contractor or Subcontractor.

§ 6.1.2 When the Owner performs construction or operations with the Owner's own forces or Separate Contractors, the Owner shall provide for coordination of such forces and Separate Contractors including persons or entities under separate contracts not administered by the Construction Manager, the Owner shall provide that such contractors shall coordinate their work with the Work of the Contractor, who shall cooperate with them and coordinate with them so as to avoid delays.

§ 6.1.3 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12. The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

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§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner's own forces, Separate Contractors or other Contractors, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Construction Manager and Architect of apparent discoverable discrepancies or defects in the construction or operations by the Owner or Separate Contractor or other Contractors that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Construction Manager and the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's or other Contractors' completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractors or other Contractors that are not apparent. Work, except as to defects not then reasonably discoverable.

...

§ 6.2.3.1 The Contractor shall not commit or permit any act which will interfere with the performance of work by any of Owner's own forces or any Separate Contractor involved with the work (collectively referred to in this Section 6.2.3 and its subsections as "Other Contractors"). If the Contractor sustains any damage through any act or omission of Other Contractors or utilities having a contract with the Owner for the performance of work upon the site or of work which may be necessary to be performed for the proper execution of the Work to be performed hereunder, or through any act or omission of a subcontractor of such Other Contractor and/or utility, the Contractor shall have no claim against the Owner for such damage, but shall have a right to recover such damage from the Other Contractor and/or utility under the provision similar to the this Section 6.2.3 and its subsections which have or will be inserted in the contracts with such Other Contractors and/or utilities.

- (i) Should any Other Contractor having or who shall hereunder have a contract with the Owner for the performance of Work upon the site, sustain any damage through any act or omission of the Contractor hereunder or through any act or omission of any subcontractor of the Contractor, the Contractor agrees to reimburse such Other Contractor for all such damages and to defend at its own expense any suit based upon such claim.
- (ii) The Contractor agrees to the fullest extent permitted by law to indemnify and hold harmless the Owner, Architect and Construction Manager from all claims, causes of action, damages, losses and expense, made against or suffered by any of them arising out of Contractor's acts or omissions of the acts or omissions of any subcontractor of the Contractor.
- (iii) The Owner's right to indemnification hereunder shall in no way be diminished, waived or discharged, by the exercise of any other remedy provided for by the Contract or by law.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction, or to property of the Owner, Separate Contractors, or ~~other~~ Other Contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner, Separate Contractors, and ~~other~~ Other Contractors shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

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If a dispute arises among the Contractor, Separate Contractors, ~~other~~ Other Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner ~~may clean up and the Construction Manager, with notice to the Architect, may,~~ without providing any prior written notice, clean up with its own employees or a cleaning contractor, and the Construction Manager, will allocate the cost among those responsible.

...

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by ~~Change Order, Construction Change Directive or order~~ Order issued by the Architect, ~~Construction Change Directive or Field Order~~ for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order issued by the Architect, Construction Change Directive or Field Order for a minor change in the Work, issued by the Architect or Construction Manager, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Change Orders shall be submitted in total amounts for a particular change and not in installments for each trade thereafter. All partial Change Order submissions will be rejected and returned to the Contractor for completion.

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§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work. A change in the Contract Sum or Contract Time shall be accomplished only by Change Order or Construction Change Directive. Accordingly, no course of conduct or dealings between the Parties or express or implied acceptance of alterations or additions to the Work shall be the basis of any Claim for an increase in the Contract Sum or any amounts due under the Contract Documents or an extension of the Contract Time.

§ 7.1.4 Unless otherwise agreed to in writing by the Owner and the Contractor, the combined overhead and profit that shall be included in the total cost (or credit) to the Owner for a Change in the Work shall be based on the following schedule:

- .1 For the Contractor, for Work performed by the Contractor's own forces:
 - a. 10% on the first \$25,000 of the change order direct cost of self-performed work,
 - b. 8% on the portion of the change order direct cost of self-performed work between \$25,000 and \$50,000 and
 - c. 6% on the portion of the change order direct cost of self-performed work between \$50,000 and \$200,000 and
 - d. 5% on the portion of the change order direct cost of self-performed work greater than \$200,000.
- .2 For the Contractor, for Work performed by the Contractor's Subcontractor five percent (5%) of the amount due the Subcontractor.
- .3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, ten percent (10%) of the cost.
- .4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractors, five percent (5%) of the amount due the Sub-subcontractor.
- .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Section 7.3.7 and shall be itemized (including labor costs).

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A Change Order is a written instrument prepared by the ~~Construction Manager~~ Architect and signed by the Owner, Construction Manager, Architect, and Contractor, stating their agreement upon all of the following:

...

.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.1 A Change Order, when issued, shall be full compensation, or credit, for the extra Work performed, omitted, or substituted. It shall show on its face, any adjustment in time for completion of the Project as a result of the Change in the Work. Each Change Order shall include all costs related thereto, including all overhead, miscellaneous expenses, and incidentals.

...

§ 7.3.1 A Construction Change Directive is a written order prepared by the ~~Construction Manager~~ Architect and signed by the Owner, Construction Manager and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly. No change in Contract Time shall be allowed for Change Orders performed by Contractor, except for substantial changes in scope determined by the Owner. In the case of increased scope, it is expected that Change Order Work shall be performed by increased manpower.

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§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Construction Manager shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 — Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- .2 — Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 — Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 — Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 — Costs of supervision and field office personnel directly attributable to the change. unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15. Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager and Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Construction Manager of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time. A Construction Change Directive signed by the Contractor indicates the Contractor's agreement

therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be the basis for preparing a Change Order for final Owner approval

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order. If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Owner, in consultation with the Construction Manager and Architect shall determine the method and the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Owner and Construction Manager may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.7 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, social security, old age and unemployment insurance, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Construction Manager and Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Overhead and profit mark-up shall include, but not be limited to, the following:
 - .1 home office expense;
 - .2 field office expense;
 - .3 supervision;
 - .4 project management & estimation; and
 - .5 small tools & equipment.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Owner, Construction Manager and Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. If Owner accepts such request in its sole discretion and subject to any qualifications regarding such acceptance, the Construction Manager and Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Construction Manager and Architect determine to be reasonably justified. The interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15. To the extent Contractor does not request payment for Work completed under the Construction Change Directive in Applications for Payment (pending final determination of the total cost of a Construction Change Directive to the Owner), or to the extent Owner does not accept a Contractor request for payment for such Work, Contractor shall perform such Work without payment, subject to its rights to pursue a Claim for such as provided in and subject to Article 15 and other applicable provisions of the Contract Documents. Any refusal by the Contractor to commence or perform any disputed Construction Change Directive Work or any other disputed Work for which it Claims or requests a Change Order, as directed by Owner, shall constitute a material breach of this Contract by Contractor

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§ 7.3.11 Agreement to any Change Order (whether resulting from Change Order request/Claim by Contractor or Construction Change Directive or otherwise) shall constitute a final settlement by Contractor of all matters arising out of or relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and/or the Contract Time.

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Construction Manager and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Construction Manager that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time. writing and binding on the Contractor

§ 7.5.2 Field Orders are not to be construed as Change Orders. A signed Field Order is not an approved Change Order.

§ 7.5.3 Neither the Owner, Architect nor Construction Manager shall sign field tickets, work orders or any other document prepared by the Contractor. Should the Contractor desire to record extra work performed, the Contractor may request that the work be monitored by the Construction Manager and submit a copy of the field ticket/work order immediately upon completion of such work. The Contractor may also request a copy of the Construction Manager's log.

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§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8. Work remaining to be completed after Substantial Completion shall be limited to items which can ordinarily be completed within the period between the payment at the time of Substantial and Final payment.

§ 8.1.3.1 "Milestone Dates" are dates critical to the Owner's operations that establish when a part of the Work is to commence or be complete. All Milestone Dates, to the extent that there are any in the Project Schedule, are of the essence and shall have the same meaning as the Required Substantial Completion Date for the purpose of Liquidated Delay Damages in this Article 8. Liquidated damages applied to Substantial Completion shall apply likewise to Milestone Dates when completion requirements for such are missed and shall be incurred until the completion requirements for such Milestone Dates are actually achieved.

...

§ 8.1.5 The Date of Final Completion of the Work is the date all of the Work required under the Contract Documents is completed, and all applicable licenses, permits, certificates, or approvals have been obtained by the Contractor and delivered to the Owner to the extent provided for in the Owner-Contractor Agreement.

§ 8.1.6 Regular School Hours shall mean the time school is in session on any given day. Off Regular Hours shall mean all other time during the day. Regular School Days shall mean days school is in session. (See school calendar)

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work. Contractor recognizes that the Project Schedule is of critical importance to the Owner. All aspects of construction must reflect that 'TIME IS OF THE ESSENCE' to the Owner.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time. Failure to prosecute the Work diligently, using such means and methods of construction consistent with the requirements of this Contract to ensure that the Work of the Project meets all Milestone Dates shall jeopardize the overall Project Schedule. This failure will mandate Contractor to increase staff, work overtime, or use other means to recover time, at the costs of Contractor. In addition, all costs due to delays in completion of the Work shall be borne by the Multiple Prime Contractor(s) responsible for delays.

§ 8.2.3.1 Contractor shall cooperate with the Owner, Architect, Engineer, Construction Manager and other Contractors on the Project, making every reasonable effort to reduce the Contract Time.

§ 8.2.4 The Contractor may request access to the site during times beyond the work hours permitted. Approval is solely at the discretion of the Owner. If approval is given, the Contractor is responsible for paying all additional costs incurred by the Owner, Architect and Owner's Representative for providing the site to the Contractor during the additional time periods.

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§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner, Architect, Construction Manager, or an employee of any of them, or of the Owner's own forces, Separate Contractors, or other Contractors; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts and the Architect, based on the recommendation of the Construction Manager, determines justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine. Absent Contractor's breach of contract or negligence in the performance of its Work and obligations under this Contract, Contractor shall be entitled to a time extension pursuant to a Change Order signed by Owner in the amount of time determined by Owner in its reasonable discretion to be appropriate for delays caused by the following occurrences, but only if such delays are proven to Owner in its reasonable discretion to demonstrably affect the critical path of the Project Schedule as relating to the Work of this Contract: the consequences of Acts of God (such as tornado, flood, fire, hurricane, etc.); unusually adverse weather; industry-wide labor strikes or industry-wide material shortages; wars or acts of terrorism; rebellion; riot; civil disobedience; embargoes; sabotage; stop work orders issued or other action or inaction by governmental or other authorities having jurisdiction over the Project or the Work and outside the reasonable control of Contractor; the presence of hazardous materials that are not the responsibility of the Contractor nor about which Contractor does not reasonably have knowledge at the time of execution of the Contract; non-compliance of the Drawings and Specifications with laws, statutes, regulations and other legal requirements (unless otherwise the responsibility of the Contractor pursuant to the Contract Documents); changes to laws, statutes, regulations and other legal requirements after execution of this Agreement (unless otherwise the responsibility of the Contractor pursuant to the Contract Documents); actions or inactions of the Construction Manager, Architect, the other Multiple Prime Contractors, Owner's other contractors, or Owner which occur through no fault of the Construction Manager; the Construction Manager's or Architect's failure to reasonably furnish instructions or Drawings or to reasonably act on submissions through no fault of Contractor; or events outside the reasonable control of Construction Manager (for which it is not contractually responsible) which could not have been reasonably foreseen by Contractor in the development of the Project Schedule for the Work of this Contract (collectively "Contemplated Delays"). If the Contractor is delayed at any time in the commencement or progress of the Work by any Contemplated Delay, then the Contractor shall submit a Claim for an extension of the Contract Time as set forth in Section 8.3.2 and its subsections, and, for Claims not waived by Contractor by operation of Article 8 or Article 15 or other applicable provisions of the Contract Documents, the Contract Time may be extended by Change Order for such time as the Owner may determine in its sole reasonable discretion. No such Change Order extending the Contract Time, however, shall result in any increased payments to the Contractor for overhead, extended overhead, or for any other amounts of any nature whatsoever (see Section 15.1.5 and its subsections).

§ 8.3.1.1 An extension of time shall be only for the number of days of delay which the Architect may determine to be due solely to the causes set forth in the application for extension of time. The Contractor shall not be entitled to receive a separate extension of time for each one of several causes of delay operating concurrently; but if at all, only the actual period of delay as determined by the Architect.

§ 8.3.1.2 The Contractor shall be responsible for labor peace on the Project and shall at all times exert its best efforts and judgment as an experienced contractor to adopt and implement policies and practices designed to avoid work stoppages, slowdowns, disputes, or strikes where reasonably possible and practical under the circumstances and shall, at all times, maintain Project wide labor harmony. The Contractor shall be liable to the Owner for all damages suffered by the Owner occurring as a result of work stoppages, slowdowns, disputes or strikes except as specifically provided for elsewhere in these Conditions.

§ 8.3.1.3 All costs for expedited material procurement to meet the schedule shall be the responsibility of the Contractor.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15. Time Limits and

other Requirements for Contractor's Notice of Claims for Extension of Contract Time for Contemplated Delay.

Notwithstanding anything contained elsewhere in the Contract Documents to the contrary, it is a condition precedent to Contractor's ability to pursue any Claim for extension of Contract Time that the Claim must be initiated by written notice by Contractor to the Owner with a copy sent to the Construction Manager and Architect in strict compliance with the requirements of this Section 8.3.2 (and its subsections). So that the Owner can properly investigate the Claim, TIME IS EXPRESSLY OF THE ESSENCE WITH RESPECT TO CONTRACTOR'S GIVING OF NOTICE OF CLAIM TO OWNER WITH THE INFORMATION AS PROVIDED HEREIN AS A CONDITION PRECEDENT TO ITS ABILITY TO ASSERT OR OTHERWISE PURSUE ANY CLAIM FOR EXTENSION OF THE CONTRACT TIME.

§ 8.3.2.1 Any Claim for Contract Time extension relating to an Contemplated Delay shall be made by Contractor to Owner in writing, with a copy sent to the Construction Manager and Architect, within seven (7) days after Contractor knew or should have known of the cause of the delay and its impact to the critical path item affected; with such written notice advising Owner of the existence, nature and effect of such condition, occurrence, or event upon the approved Project Schedule as relating to Contractor's Work, and must state why and in what respects, if any, the condition is causing or may cause a delay along with demonstrable proof of the alleged impact on the critical path of the approved Project Schedule as relating to Contractor's Work. Contractor's Claim shall suggest strategies to Owner to mitigate the effect of any such delay including without limitation overtime, re-sequencing and other remedial methods.

§ 8.3.2.2 No Claim for extension of the Contract Time due to weather conditions will be considered unless accompanied by documentary evidence showing that such weather is unusually severe and abnormal for the past 50 years and could not have been reasonably anticipated (or reasonably protected against), and unless the weather conditions had an adverse effect on the critical path of the Project Schedule as relating to Contractor's Work.

§ 8.3.2.3 Failure of the Owner to respond in writing within thirty (30) days following delivery of Contractor's written notice required by this Section 8.3.2 and its subsections shall be deemed a rejection of the Claim.

§ 8.3.2.4 Failure of the Contractor to strictly comply with the requirements of Section 8.3.2 (and its subsections) shall be deemed a conclusive waiver by the Contractor of any and all Claims for damages for delay and/or extension of the Contract Time regarding delay arising from such conditions, occurrences or events.

§ 8.3.2.5 The determination of the Owner regarding any Claim for an extension of Contract Time by notice of delay as provided herein shall be binding and conclusive on the Contractor.

§ 8.3.2.6 Permitting the Contractor to continue with the Work after the time fixed for its completion has expired, or after the time to which such completion may have been extended has expired, or the making of any payment to the Contractor after such time, shall in no way operate as a waiver on the part of the Owner of any of its rights under this Contract.

§ 8.3.2.7 When the Contract Time has been extended, as provided under this Section 8.3, such extension of time shall not be considered as justifying extra compensation to the Contractor for administrative costs of other similar reasons.

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§ 8.3.4 In no event shall the Contractor be entitled to damages for delay under the Contract (see Section 15.1.5 and its subsections).

§ 8.3.5 To the extent the Contractor is required to work during overtime hours, weekends, holidays or at other times which are not regularly scheduled, due to the fault of the Contractor, or where Contractor requests to work during these periods to facilitate its schedule, the Contractor shall be responsible for the costs incurred by the Owner, the Construction Manager, the Architect and/or others attributable to working during periods which have not been ordinarily scheduled.

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Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Construction Manager, before the first Application for ~~Payment~~, Payment ("Schedule of Values"), allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Construction Manager and the Architect. ~~This schedule, unless objected to~~ The Schedule of Values submitted by Contractor will be adjusted as

required by Construction Manager or Architect as necessary for their approval This schedule, once approved by the Construction Manager or Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. The Construction Manager shall forward to the Architect the Contractor's schedule of values. Any changes to the schedule of values shall be submitted to the Construction Manager and supported by such data to substantiate its accuracy as the Construction Manager and the Architect may require, and unless objected to by the Construction Manager or the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment. The Schedule of Values shall be provided on the AIA G702 form and no payments will be made to Contractor until such billing breakdown and initial submissions are approved.

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§ 9.3.1 At least fifteen days before the date established for each progress payment, the Contractor shall submit to the Construction Manager an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The Schedule of Values for completed portions of the Work in compliance with all requirements of Article 5 of the Agreement and elsewhere in the Contract Documents. Such application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner, Construction Manager or Architect require, such as copies of requisitions, and releases of waivers of lien from Subcontractors and suppliers, material suppliers and shall reflect retainage if provided for in the Contract Documents. Each item listed in the Application for Payment shall have a separate amount for labor and a separate amount for material and other costs. The form of Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G7032, Application and Certificate for Payment. Alternative payment application forms are not permitted. AIA Document G732 shall be supported by a current authorized edition of AIA Document G703, Continuation Sheet.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Construction Manager and Architect, but not yet included in Change Orders.Directives.

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§ 9.3.1.3 Until Substantial Completion, the Owner shall pay 95 percent of the amount due the Contractor on account of progress payments minus monies withheld for any duly filed liens against said Contractor. At Substantial Completion, the Construction Manager and Architect may authorize remaining partial payments to be made in full, less twice the value of items remaining to be completed (punchlist) and an amount necessary to satisfy any outstanding claims, liens, or judgments.

§ 9.3.1.4 Applications for Payment must be accompanied by any and all releases of liens for previous applications from Contractor and their subcontractors and a sworn and notarized statement that all subcontractors have been paid to at least 95% of previously requisitioned sums. As-built drawings showing all Work up to the time of the Request for Payment shall be a prerequisite for making payment.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site. Such payment by the Owner for materials, equipment, fixtures and supplies stored on or off the Site shall not relieve the Contractor of its responsibility to provide reasonable protection of said materials, equipment, fixtures and supplies until their incorporation into the Work. Any theft, damage or other form of loss shall be remedied solely by the Contractor at their expense.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, shall be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, material suppliers, or other persons or entities that provided labor, materials and equipment relating to the Work.

§ 9.3.3.1 The Contractor shall save and keep the Owner and the Owner's property free from all liens and claims, legal or equitable, arising out of Contractor's work hereunder. In the event any such lien is filed by anyone claiming by, through or under the Contractor, the Contractor shall remove and discharge same within ten (10) days of the filing thereof. The Contractor further expressly undertakes to defend the Indemnitees at the Contractor's sole expense against any actions, lawsuits or proceedings brought against Indemnitees as a result of liens filed against the Work, the site of any of the Work, the Project site and any improvements thereon, payments due the Contractor or any portion of the property of any of the Indemnitees referred to collectively as liens in this Section 9.3.3.1. The Contractor hereby agrees to indemnify and hold Indemnitees harmless against any such liens or claims of lien and agrees to pay any judgment or lien resulting from any such actions, lawsuits or proceedings.

§ 9.3.3.2 The Owner shall release any payments withheld due to a lien or claim of lien if the Contractor obtains security acceptable to the Owner or a lien bond which is: (1) issued by a surety acceptable to the Owner, (2) in form and substance satisfactory to the Owner, and (3) in an amount not less than One Hundred Fifty percent (150%) of such lien claim. By posting a lien bond or other acceptable security, however, the Contractor shall not be relieved of any responsibilities or obligations under this Section 9.3, including, without limitation, the duty to defend and indemnify the Indemnitees. The cost of any premiums incurred in connection with such bonds and security shall be the responsibility of the Contractor and shall not be part of, or cause any adjustment to, the Contract Sum.

§ 9.3.3.3 Notwithstanding the foregoing, the Owner reserves the right to settle any disputed mechanic's or material men's lien claim by payments to the lien claimant or by such other means as the Owner, in the Owner's sole discretion, determines is the most economical or advantageous method of settling the dispute. The Contractor shall promptly reimburse the Owner, upon demand, for any payments to be made other than those made from the retainage under the Owner-Contractor Contract.

§ 9.3.4 In connection with all progress payments, the Contractor shall submit releases/waivers of lien with respect to all Work previously performed and for which payments were made under a preceding application. Beginning with the second payment requisition and with each subsequent payment requisition, Contractor shall furnish to Owner, without limitation, the following documents:

- a. Labor and/or Materials Affidavit
- b. Daily and Weekly Wage Affidavit;
- c. Contractor's Partial Release and Waiver of Lien
- d. Written Certified Payroll information in compliance with applicable laws; and
- e. Additional information required by the Construction Manager Owner and/or any applicable laws, codes, rules and or regulations applicable to the Work of the Contractor.

§ 9.3.5 The Contractor shall submit a "pencil-copy" requisition to the Construction Manager no later than the date as directed by the Construction Manager for work completed up to that day for review with field personnel and for comparison to the Contractor's as-built drawings which shall be updated daily per the General Conditions. After any adjustments are made, the Contractor shall finalize and submit to the Construction Manager no later than the date as directed by the Construction Manager five (5) copies of the requisition, signed and notarized, for the Construction Manager's final approval and signature. The Owner shall make payment within thirty (30) days from the date of the Construction Manager's final approval and signature.

§ 9.4.1 Where there is only one Contractor, the Pursuant to the procedures and timelines set forth in Article 5 of the Agreement and elsewhere in the Contract Documents, the Construction Manager will, within seven days after the Construction Manager's receipt of the Contractor's Application for Payment, review the Application, certify the amount the Construction Manager determines is due the Contractor, and forward the Contractor's Application and Certificate for Payment to the Architect. Within seven days after the Architect receives the Contractor's Application for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Certificate for Payment, in the full amount of the Application for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward to the Contractor the Architect's notice of withholding certification.

§ 9.4.2 Where there is more than one Contractor performing portions of the Project, the Construction Manager will, within seven days after the Construction Manager receives all of the Contractors' Applications for Payment: (1) review the Applications and certify the amount the Construction Manager determines is due each of the Contractors; (2) prepare a Summary of Contractors' Applications for Payment by combining information from each Contractor's application with information from similar applications for progress payments from the other Contractors; (3) prepare a Project Application and Certificate for Payment; (4) certify the amount the Construction Manager determines is due all Contractors; and (5) forward the Summary of Contractors' Applications for Payment and Project Application and Certificate for Payment to the Architect. The Construction Manager's certification of an Application for Payment shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's certification will constitute a representation that, to the best of the Construction Manager's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.2.1 Within seven days after the Architect receives the Project Application and Project Certificate for Payment and the Summary of Contractors' Applications for Payment from the Construction Manager, the Architect will either (1) issue to the Owner a Project Certificate for Payment, with a copy to the Construction Manager; or (2) issue to the Owner a Project Certificate for Payment for such amount as the Architect determines is properly due, and notify the Construction Manager and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Project Application for Payment, and notify the Construction Manager and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1. The Construction Manager will promptly forward the Architect's notice of withholding certification to the Contractors.

§ 9.4.3 The Construction Manager's certification of an Application for Payment or, in the case of more than one Contractor, a Project Application and Certificate for Payment, shall be based upon the Construction Manager's evaluation of the Work and the data in the Application or Applications for Payment. The Construction Manager's Architect's issuance of a Certificate for Payment shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Construction Manager's Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified.

§ 9.4.4 The Architect's issuance of a Certificate for Payment or, in the case of more than one Contractor, Project Application and Certificate for Payment, shall be based upon the Architect's evaluation of the Work, the recommendation of the Construction Manager, and data in the Application for Payment or Project Application for Payment. The Architect's certification will constitute a representation that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is, or Contractors are, entitled to payment in the amount certified. representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect.

§ 9.4.5 The representations made pursuant to Sections 9.4.3 and 9.4.4 are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Construction Manager or Architect. issuance of a Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.4.6 The issuance of a Certificate for Payment or a Project Certificate for Payment will not be a representation that the Construction Manager or Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to

substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5.1 The Construction Manager or Architect may withhold a Certificate for Payment ~~or Project Certificate for Payment~~ in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Construction Manager's or Architect's opinion the representations to the Owner required by Section 9.4.2 and 9.4.3 ~~and 9.4.4~~ cannot be made. If the Construction Manager or Architect is unable to certify payment in the amount of the Application, the Construction Manager will notify the Contractor and Owner as provided in Section 9.4.1 ~~and 9.4.2-9.4.1~~. If the Contractor, Construction Manager and Architect cannot agree on a revised amount, the Architect will promptly issue a ~~Certificate for Payment or a Project Certificate for Payment~~ for the amount for which the Architect is able to make such representations to the Owner. The Construction Manager or Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment or Project Certificate for Payment previously issued, to such extent as may be necessary in the Construction Manager's or Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from the acts and omissions described in Section 3.3.2 because of

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- ~~.6~~ reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; ~~or~~
- ~~.7~~ ~~repeated~~ .7 any failure to carry out the Work in accordance with the Contract Documents.
- ~~.8~~ violations of law applicable to the Work which are the responsibility of Contractor;
- ~~.9~~ erroneous estimates of the percentage of Work performed;
- ~~.10~~ Contractor's failure to give notice of errors and inconsistencies;
- ~~.11~~ failure of Contractor to comply with mandatory requirements for maintaining record drawings (NOTE - Contractor may be required to check record drawings each month. Written confirmation that the record drawings are "up-to-date" may be required by the Architect before approval of the Contractor's monthly Application for Payment will be considered); or
- ~~.12~~ any other reasonable grounds for objection or withholding as provided in the agreement or as permitted by law.

§ 9.5.2 When ~~either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15;~~ the above reasons for withholding certification are removed, certification will be made for amounts previously withheld. The Owner shall not be deemed in default by reason of withholding payment while any conditions described in 9.5.1 remain.

§ 9.5.3 ~~When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.~~

If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.

§ 9.5.4 ~~If the Architect or Construction Manager withholds certification for payment under Section 9.5.1, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Construction Manager, and both will reflect such payment on the next Certificate for Payment.~~ Contractor disputes any determination by the Construction Manager or Architect with regard to any Certificate of Payment, the Contractor nevertheless shall expeditiously continue to prosecute the Work.

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§ 9.6.1 After the Architect has issued a Certificate for Payment ~~or Project Certificate for Payment~~, the Owner shall make payment in the manner and within the time provided in the Contract ~~Documents~~, Documents and shall so notify the Construction Manager and Architect. No partial payment made hereunder shall be or be construed to be final acceptance or approval of that portion of the Work to which such partial payment relates or relieve the Contractor of any of its obligations hereunder with respect thereto.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner. Notwithstanding anything in the Contract to the contrary, the Contractor shall pay each Subcontractor or materialman as required by New York General Municipal Law Section 106(b), for work performed by the Subcontractor or materialman under this Contract. The Contractor shall include in each of its Subcontracts a provision requiring each Subcontractor to make payment to each of its subcontractors or suppliers for Work performed under this Contract in the same manner and within the same time period as set forth herein.

§ 9.6.3 The Construction Manager ~~will, on request,~~ may, on written request by a Subcontractor to the Owner, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Owner, Construction Manager and Architect on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the ~~right-right, but no obligation,~~ to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and ~~suppliers~~ material and equipment suppliers' amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner, Construction Manager nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to material and equipment suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

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If the Construction Manager and Architect do not issue a Certificate for Payment or a Project Certificate for Payment, through no fault of the Contractor, within fourteen days after the Construction Manager's receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within ~~seven-ten~~ seven days after the date established in the Contract Documents, the amount certified by the Construction Manager and Architect and such certified amount is not otherwise appropriately withheld by Owner pursuant to operation any of the terms and conditions of the Contract Documents or awarded by binding dispute resolution, then the Contractor may, upon seven additional business days' written notice to the Owner, Construction Manager and Architect, stop the Work until payment of the appropriate amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

...

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents such that the Work shall have been completed and all systems included in the Work shall be operational in accordance with the Contract Documents so the Owner can occupy or utilize the Work for its intended use. use to the reasonable exclusion of Contractor with only "Punch-List" or minor items remaining which can be corrected or completed without any material interference with Owner's use of the Work. It is a condition precedent to Substantial Completion that the Owner has received all Certificates of Occupancy and any permits, approvals, licenses, and other documents from any governmental authority having jurisdiction thereof necessary for the beneficial occupancy of the Project.

§ 9.8.2 ~~When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall notify the Construction Manager, and the Contractor and Construction Manager shall jointly prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.~~

§ 9.8.1.1 When advised by the Contractor that the Work is substantially completed, the Architect and the Contractor shall, within a reasonable time, make a joint inspection of the work and if the Architect shall determine the Work is substantially completed, the Contractor shall submit a substantial completion application.

§ 9.8.1.2 Notifications by the Contractor to the Architect for inspections to confirm Substantial Completion as parts and/or as a whole shall be judiciously made and without abusing said process.

§ 9.8.2 No later than 14 days prior to the Contract-scheduled date of Substantial Completion, the Contractor shall issue a letter to the Architect and Construction Manager confirming their work is on schedule for Substantial Completion by the contract specified date. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absent the contractor letter confirming readiness of work, the Architect may elect to postpone the substantial completion inspection. If the Architect's inspection discloses any item which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine the actual date of Substantial Completion.

§ 9.8.2.1 The Architect will perform no more than one inspection to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. If the Architect and/or Construction Manager are required to perform multiple inspections because the Work fails to comply with the Contract Documents, the amount of compensation paid to the Architect or Construction Manager by Owner for additional services shall be reimbursed by Contractor to Owner and may at Owner's discretion be deducted from payments (or final payment) otherwise payable to Contractor, if available.

§ 9.8.3 Upon receipt of the list, the Architect, assisted by the Construction Manager, will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect, assisted by the Construction Manager, to determine unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.4 When the Architect, assisted by the Construction Manager, determines that the Work of all of the Contractors, or designated portion thereof, is substantially complete, the Construction Manager will prepare, and the Construction Manager and Architect shall execute, a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents. For any

uncompleted work at the time of Substantial Completion, the Owner will retain the monetized value of the remaining work, i.e. "punch list", times 200 percent as determined by the Construction Manager, in addition to any duly filed and unresolved liens against the Contractor as per Section 106-b of the N.Y.S. General Municipal Law, which will be released upon notification by the Contractor to the Construction Manager that the Work has been completed to the Architect's satisfaction.

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§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. ~~When the Contractor considers a portion substantially complete, the Contractor and Construction Manager shall jointly prepare and submit a list to the Architect as provided under Section 9.8.2.~~ Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect after consultation with the Construction Manager.

...

§ 9.9.3 Unless otherwise agreed upon, any partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents. Documents nor does it waive the Owner's right to liquidated damages. Further such occupancy does not relieve the Contractor from completing the Work within the time period specified.

...

§ 9.10.1 ~~Upon completion of the Work, the Contractor shall forward to the Construction Manager a notice that the Work is ready for final inspection and acceptance, and shall also forward to the Construction Manager a final Contractor's Application for Payment. Upon receipt, the Construction Manager shall perform an inspection to confirm the completion of Work of the Contractor. The Construction Manager shall make recommendations to the Architect when the Work of all of the Contractors is ready for final inspection, and shall then forward the Contractors' notices and Application for Payment or Project Application for Payment, to the Architect, who will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Construction Manager and Architect will promptly issue a final Certificate for Payment or Project On or within seven (7) days following the date of Final Completion (as established in the bid documents or modified by Change Order) the Architect will conduct a final inspection of the work. As a result of that inspection, the Architect will evaluate the work and will issue a Final Inspection Report. This report will document the condition of the Work and will render a formal opinion as to the whether or not the Work or designated portion is complete. If, as a result of the Architect's inspection, it is determined that the Work is not complete and in accordance with the Contract Documents, the Architect shall notify the Owner and Contractor in writing of this opinion. This notice will include the Final Inspection Report documenting the conditions of the work and will be considered a formal notice to the Contractor of their failure to fulfill the terms and conditions of their Contract.~~

If as a result of this inspection, it is determined that the Work is complete, the Contractor shall submit their Final Payment Application and Certificate for Payment. The Architect will then certify and issue the final Certificate for Payment stating that to the best of their-the Architect's knowledge, information and belief, and on the basis of their on-site-the Architect's periodic site visits and inspections, the Work has been completed in accordance with the terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Construction Manager's and Architect's final Certificate for Payment or Project Certificate for Payment Architect's final Certificate for payment will constitute a further representation that the conditions listed in Section-section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled. The final Certificate for Payment will not be issued until all work on the final inspection report is completed or corrected.

§ 9.10.1.1 The Architect will perform no more than one on-site observation to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. If the Architect is required to perform multiple inspections or on-site observations because the Work fails to comply with the Contract Documents, the amount of compensation paid to the Architect by Owner for additional services shall be reimbursed by Contractor to Owner and may at Owner's discretion be deducted from payments (or final payment) otherwise payable to Contractor, if available.

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§ 9.10.2.1 Additionally, all warranties and guarantees required under or pursuant to the Contract Documents shall be assembled and delivered by the Contractor to the Construction Manager prior to submission of a final Application for Payment. The Construction Manager and Architect shall additionally not issue the Final Certificate for Payment until the all warranties and guarantees have been received, accepted and approved and until the following have occurred:

- .1 the Owner has received the final certificate of occupancy for the Project or that portion of the Project which encompasses the Work of the Contractor, if relevant;
- .2 the Project or that portion of the Project which encompasses the Work of the Contractor has been completed and accepted, and;
- .3 all procedures regarding final payment have been completed and the Owner has received state agency approval (if required) to make final payment, and otherwise all approvals and/or sign-offs have been obtained from any authorities having jurisdiction over the Work or the Project which are required with respect to the Work of this Contract.

...

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a materials supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.10.6 If the Contractor is responsible for delays in the final completion and closeout beyond the contract specified time, the Owner is entitled to reimbursement from the Contractor for amounts paid by the Owner to subsequently extend the Electronic Submittal System (Submittal Exchange) or, the Owner may, in its discretion deduct such amount from payments (or final payment) otherwise payable to Contractor, if available.

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The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Contractor shall be responsible for maintaining safety data sheets at the site. The Contractor shall submit the Contractor's safety program to the Construction Manager for review and coordination with the safety programs of other Contractors. The Construction Manager's responsibilities for review and coordination of safety programs shall not extend to direct control over or charge of the acts or omissions of the Contractors, Subcontractors, agents or employees of the Contractors or Subcontractors, or any other persons performing portions of the Work and not directly employed by the Construction Manager.

§ 10.1.1 Contractor shall submit its site safety and corporate safety policy/program to the Construction Manager in no event later than within two (2) weeks following issuance of a Notice to Proceed or commencement of Work, whichever is earlier. The safety policy/program shall be in conformance with and meet or exceed OSHA standards and other applicable federal, state and local statutes, laws, codes, ordinances, regulations, rules, and lawful orders of public authorities. The safety policy/program shall also include provisions requiring Subcontractors to participate in safety training to acquaint such Subcontractors with the provisions of the Regulations of the Commissioner of Education (Section 155.5) and shall set forth how the Contractor plans to maintain a safe work environment.

...

Prior to commencement of the Work, the Contractor shall document existing conditions, record existing damage to construction or property at the site to remain and notify the Construction Manager and Architect of the same in writing.

§ 10.2.2.1 The Contractor agrees in working on the Owner's premises to comply with all applicable codes and safety regulations as they apply to the Work and as set forth in the Occupational Safety and Health Act of 1970 (OSHA), as revised to date.

§ 10.2.2.2 Additional Requirements:

- .1 Ladders and scaffolding shall be in good operating condition. Any damaged ladders, bakers, and rolling scaffolding shall be immediately removed from the job.
- .2 Ground properly all electric operated tools.
- .3 Wear protective eye goggles during any cutting, whether by hand or mechanical means.
- .4 Remove nails, screws, bolts and tack strips from floor immediately after demolition.
- .5 Workpersons to have proper shoes and clothing as per OSHA recommendation.

§ 10.2.2.3 During any pandemic, epidemic and any declaration of emergency as a result thereof, the Contractor shall ensure that its employees are provided with and use face masks, exercise social distancing at the workplace and follow any other safety requirements required by federal and state law.

§ 10.2.2.4 The Contractor agrees, in order that the work will be completed with the greatest degree of safety: To conform to the requirements of the OSHA as amended and the Construction Safety Act of 1969 as amended, including all standards and regulations that have been since or shall be promulgated by the governmental authorities which administer such acts, and shall hold harmless the Owner, Owner's Representative, the Construction Manager, the Architect, and all their employees, consultants and representatives, from any and all claims, damages, losses, suits obligations, fines, penalties, costs, charges and expenses which may be imposed upon or incurred by or asserted against any of them by reason of any act or omission of such Contractor or any Subcontractor or any person or firm directly or indirectly employed by such Contractor, with respect to violations of OSHA requirements, rules and/or regulations.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel-personnel, and give the Owner reasonable advance notice, and shall maintain on the site, a full set of safety instructions relating to all such materials.

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If either party-Contractor or any Subcontractor (or any employee or anyone for whom either of them are legally responsible) suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, property, written notice of the injury or damage, whether or not insured, shall be given to the other party-Owner and Construction Manager within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter. Owner and Construction Manager to investigate the matter.

§ 10.2.9 The Contractor shall promptly report, in writing, to the Owner, Construction Manager and Architect all accidents arising out of or in connection with the Work which cause death, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages re caused, the accident shall be reported immediately by telephone or messenger to the Owner and the Construction Manager.

§ 10.2.10 The Contractor solely assumes the following distinct and several risks whether said risks arise from acts or omissions, whether supervisory or otherwise, of the Owner, of the Construction Manager, of third persons or from any other cause, including unforeseen obstacles and difficulties which may be encountered in the prosecution of the Work, whether said risks are within or beyond the control of the Contractor and whether said risks involve any legal duty, primary or otherwise, imposed upon the Owner or Construction Manager, excepting only risks which arise from faulty designs as shown by the Plans and Specifications or from affirmative acts of the Owner or the Owner's members, officers, representatives or employees committed with intent to cause the loss, damage or injuries hereinafter set forth:

- .1 The risk of loss or damage, includes direct or indirect damage or loss, of whatever nature to the Work or to any plant, equipment, tools, materials or property furnished, used, installed or received by the Owner, the

Construction Manager, the Contractor or any Subcontractor, materialmen or workperson performing services or furnishing materials for the Work. The Contractor shall bear said risk of loss or damage until Final Acceptance of the Work by the Owner or until completion or removal of said plant, equipment, tools, materials or property from the Site and the vicinity thereof, whichever event occurs last. In the event of said loss or damage, the Contractor immediately shall repair, replace or make good any said loss or damage.

- .2 The risk of claims, just or unjust, by third persons against the Contractor or the Owner, the Architect and the Construction Manager on account of wrongful death, bodily injuries and property damage, direct or consequential, loss or damage of any kind whatsoever arising or alleged to arise out of or as a result of or in connection with the performance by the Contractor of the Work, whether actually caused by or resulting from the performance of the Work, or out of or in connection with the Contractor's operations or presence at or in the vicinity of the Site. The Contractor shall bear the risk for all deaths, injuries, damages or losses sustained or alleged to have been sustained prior to the Final Acceptance of the Work. The Contractor shall bear the risk for all deaths, injuries, damages or losses sustained or alleged to have been sustained resulting from the Contractor's negligence or alleged negligence which is discovered, appears, or is manifested after acceptance by the Owner.

§ 10.2.11 Title to all completed or partially completed work at the job site, and to all materials delivered to and stored at said job site which are intended to become a part of the complete work covered by the Contract, shall be in the name of the Owner. Notwithstanding the foregoing, and prior to acceptance of the complete work by the Owner, the Contractor shall be liable for all loss of or damage to said completed work, partially completed work, materials furnished by the Contractor, and materials or equipment, furnished by others, the custody of which has been given to the Contractor, arising from any cause other than those against which the Owner herein undertakes to carry insurance. In the event of loss or damage from causes other than those against which the Owner undertakes to carry insurance, the Contractor shall replace or repair the said work or materials at their own cost and expense. In the event there is a deductible in Owner's insurance, the Contractor shall pay any such deductible.

§ 10.2.12 If the Contractor shall sustain any loss or damage arising from the nature of the work to be done under this Contract or from any unforeseen or unusual obstructions or difficulties which may be encountered in prosecuting the work or from the actions of the elements including water, wind and frost, the Contractor shall maintain suitable adequate safeguards to protect all property and personnel, public or private.

§ 10.2.13 The Contractor's obligations under this Article shall not be deemed waived, limited or discharge by the enumeration or procurement of any insurance for liability for damages. The Contractor shall notify its insurance carrier within twenty-four (24) hours after receiving a notice of loss or damage or claim from the Owner or Construction Manager. The Contractor shall make a claim on its insurer specially under the provisions of the contractual liability overages and any other overages afforded the Owner or the Construction Manager including those of being an additional insured where applicable.

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§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner, Construction Manager and Architect of the condition in writing.

§ 10.3.2 Upon receipt of the Contractor's notice, written notice regarding hazardous materials or substances not addressed in the Contract Documents, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor, Construction Manager and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor, the Construction Manager and the Architect will promptly reply to the Owner in writing stating whether or not any of them has reasonable objection to the persons or entities proposed by the Owner. If the Contractor, Construction Manager or Architect has an objection to a

person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor, the Construction Manager and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended ~~appropriately~~ appropriately, and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Construction Manager, Architect, their consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to reasonable attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact of hazardous materials or substances not addressed in the Contract Documents if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site ~~unless such materials or substances are required by the Contract Documents. The Owner site. The Contractor shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.~~

§ 10.3.5 ~~The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for To the fullest extent permitted by law, the Contractor shall indemnify the Owner from and against claims, damages, losses, costs and expenses, including but not limited to, reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder), the Owner incurs arising out of or resulting from (1) remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except-except, in both instances, to the extent that the cost and expense are due to the Owner's fault or negligence.~~

§ 10.3.6 If, without fault or negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby ~~incurred.~~ incurred.

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§ 10.5 Miscellaneous

§ 10.5.1 Smoking (including e-cigarettes and vaping) and other tobacco use, alcoholic beverages and controlled substances are expressly prohibited on all District properties. Smoking (including e-cigarettes and vaping) is also prohibited within 100 feet of the boundary of the property of any elementary or secondary school. Reporting to work impaired or under the influence of or being at work impaired by alcohol or controlled substances is strictly prohibited. The Contractor bears the responsibility of determining if its, or its Subcontractor's employees are impaired which would jeopardize the safety of the public, the employees of other Contractors and their Subcontractors, the Owner, Architect and Construction Manager.

§ 10.5.2 All persons representing Contractors, Subcontractors or suppliers shall wear shirts, long pants and other proper attire while on District property. All persons representing Contractors, Subcontractors or suppliers shall conduct themselves in a manner consistent with the rules and policies of the Owner/School District while on District property or otherwise representing this Project. All Contractors, Subcontractors, suppliers and their employees are prohibited from conversing with school personnel and students. Any construction employees found doing so will be removed from the site. NO COMMUNICATION BETWEEN WORKERS AND STUDENTS WILL BE TOLERATED. All Contractors, Subcontractors, suppliers, and their employees must not use indecent language, profanity, obscene language, discriminatory or harassing language and anyone doing so will be removed from the site. Artwork and decoration found on vehicles belonging to Contractor's or Subcontractor's employees parked on or near the school property which contain indecent language, or pictures or symbols that foreseeably could cause a disruption to the educational environment, shall either be covered or removed from the location. The use of radios, tape players, CD players and the like is prohibited within the Project site

§ 10.5.3 Identification Badges: Contractor will provide each of their field personnel and workpersons with an identification badge in accordance with Construction Manager's or Owner's instructions, upon beginning Work on site. All workpersons shall display the badge at all times on site. Failure to wear identification badge at all times will result in the immediate removal of the individual from the jobsite

§ 10.5.4 All crane picks, materials delivery, etc. must be coordinated so as not to lift over any occupied area of the building. If necessary, this work shall be done on off hours to ensure the safety of the building occupants. Crane location must be carefully chosen to ensure the safety of building occupants. Also, Contractor must provide all engineering for crane sizing and sub-base platforms if necessary.

§ 10.5.5 When all or a portion of the Work is suspended for any reason, the Contractor shall securely fasten down all coverings and protect the Work, as necessary, from injury by any cause. Further, Contractor, in connection with its performance of the Work or otherwise, shall not interfere in any manner with the operation of any business adjacent to the Project site including, without implied limitation, any interference with traffic, access or egress, parking and cleanliness. The Contractor shall protect and cause its Subcontractors to protect all work from damage in the event of temporary suspension of the Work.

§ 10.5.6 The Contractor shall take all necessary precautions to insure against fire during construction and be responsible to ensure that the area within Contract limits is kept orderly, safe, and clean and that combustible rubbish shall be stored on the site in such a manner and at such locations as designated by Owner to:

- (i) provide and maintain adequate fire protection. The fire protection shall be adequate at all times, and shall be subject to applicable codes and regulations.
- (ii) Comply with regulations, OSHA standards, and codes of local Fire Marshall, agencies, and departments having jurisdictions.

§ 10.5.7 The Contractor shall be required to keep fire alarm operational at all times or provide fire watch approved by the local Fire Marshall.

§ 10.5.8 The Contractor shall at all times provide the proper housekeeping to minimize potential fire hazards and shall provide approved spark arresters on all steam engines, internal combustion engines and flues.

§ 10.5.9 No fires shall be built on the premises nor shall open flame devices of any kind be employed within the building except for field welding with supervised fire watch.

§ 10.5.10 Free access to fire hydrants and standpipe connections shall be maintained at all times during construction operations, and portable fire extinguishers shall be provided by the Contractor and made conveniently available throughout the construction site. The Contractor shall notify its employees and subcontractors of the location of the nearest fire alarm box at all locations where the work is in progress.

§ 10.5.11 From the commencement to the completion of the Project, the Contractor shall keep the parts of the work and the buildings free from accumulation of water no matter what the source or cause of water.

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§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Construction Manager and Construction Manager's consultants, and the Architect and Architect's consultants, shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents. obtain, pay for and keep in full force and effect during the entire term of this Contract, and during the performance, final completion and acceptance of any Work, and after the term of this Contract (as may be specified herein) insurance, in a company or companies lawfully licensed to do business in the State of New York, as designated by this Article 11 and any other insurance required by applicable law, regulations, or orders of state, municipality or other entity having jurisdiction over the Work or the Project. Contractor shall not take

any action, or omit to take any action that would suspend or invalidate any of the required coverages during the time period such coverages are required to be in effect.

§ 11.1.1.1 Workers' Compensation. and any other federal and/or state coverages as appropriate, including but not limited to: Occupational Disease Benefits, Voluntary Compensation, and Disability Benefits, for not less than the statutory requirements, and if applicable an "Other States Endorsement"; and

Employer's Liability Insurance with limits not less than the statutory requirements or \$1,000,000 (each accident), \$1,000,000 (disease policy limit), and \$1,000,000 (disease, each employee), whichever is greater. Proof of coverage must be on the approved specific form, as required by the New York State Workers' Compensation Board. ACORD certificates are not acceptable.

§ 11.1.1.2 Commercial General Liability Insurance is to be provided under the Insurance Service Office's (ISO) most current form, on a project specific basis, with limits not less than the following required limits:

<u>Each Occurrence:</u>	<u>\$1,000,000</u>
<u>General Aggregate (per project):</u>	<u>\$2,000,000</u>
<u>Products and Completed/Operations:</u>	<u>\$2,000,000</u>
<u>Personal & Advertising Injury:</u>	<u>\$1,000,000</u>
<u>Fire Damage (any one fire):</u>	<u>\$ 100,000</u>
<u>Medical Expense (any one person):</u>	<u>\$ 10,000</u>

Such insurance shall include the following coverages:

- (i) claims for damages because of bodily injury, occupational sickness or disease, or death;
- (ii) claims for damages insured by usual personal injury liability coverage;
- (iii) claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
- (iv) premises operations;
- (v) product liability and completed operations, and the policy shall specifically include coverage for two (2) years of extended completed operations coverage, which will commence immediately following the expiration date of the Commercial General Liability policy;
- (vi) owner's protective;
- (vii) contractors protective;
- (viii) contractual liability covering liabilities assumed under the Contract (including the tort liability of another assumed in a contract), and including, coverage for claims arising out of construction or demolition operations when working within 50 feet of railroad track;
- (ix) personal injury and advertising injury liability;
- (x) extended bodily injury coverage with respect to bodily injury resulting from the use of reasonable force to protect persons or property;
- (xi) medical payments coverage;
- (xii) broad form property damage liability coverage, including coverage for completed operations;
- (xiii) explosion, collapse, and underground property damage (XCU);
- (xiv) construction means and methods;
- (xv) independent contractors;
- (xvi) Owner and others' identified herein as additional insured to be specifically evidenced as additional insureds via ISO Endorsements GC 2010 and CG 2037.

§11.1.1.3 Comprehensive Auto Liability Insurance, including uninsured/underinsured and medical payment protection, and including all owned, non-owned and hired autos, with a limit of liability of not less than \$1,000,000 each occurrence (combined single limit for personal injury, including bodily injury or death, and property damage).

§11.1.1.4 Umbrella/Excess Policy, providing excess coverage in excess of the limits for the insurance coverages required by Sections 11.1.1.1, 11.1.1.2, and 11.1.1.3 above, with such excess/umbrella coverage being at least as broad as each and every one of the underlying policies), with the provision that coverage shall extend for a period of at least two (2) years from the date of final completion and acceptance by Owner of all Work; with a minimum limit not less than \$5,000,000 per occurrence/annual general aggregate. In the event the underlying policies have different renewal dates, the Contractor shall ensure that the underlying policies are maintained for the term specified in this Contract.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located. All insurance shall be written on an occurrence basis. A copy of the additional insured endorsement shall be attached.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished. Contractor's insurance requirements shall be provided by an insurance carrier licensed to do business in the State of New York and have an A.M. Best Rating of A- or better as determined in the most recent A.M. Best Publication, or as may otherwise be agreed by Owner.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice directly to the Owner, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage. Insurance coverage to be provided by the Contractor shall state that the Contractor's coverage shall be primary and non-contributing to any insurances (or self-insurance), including any deductible, maintained by, or provided to Owner or the other Additional Insureds; and shall contain a Waiver of Subrogation in favor of Owner and the other Additional Insureds, so that in no event shall the insurance carriers have any right of recovery against the Owner, the other Additional Insureds, or the agents or employees or either of them; and shall contain a separation of insured provision (severability of interest clause). If the Owner or another Additional Insured has other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis.

§ 11.1.5 In the event that any of the insurance coverage to be provided by the Contractor contains a deductible or self-insured retention, the Contractor shall indemnify and hold the Owner, and any Additional Insured harmless from the payment of such deductible, which deductible shall in all circumstances remain the sole obligation and expense of the Contractor.

§ 11.1.6 The Contractor shall require all Subcontractors to carry the same insurance coverages and limits of liability as set forth herein and adjusted to the nature of Subcontractors' operations and submit same to the Owner through the Construction Manager for approval prior to start of any Work. In the event Contractor fails to obtain the required certificates of insurance from Subcontractor and prove them to Construction Manager and a claim is made or suffered, the Contractor shall, to the fullest extent permitted by law, indemnify, defend, and hold harmless the Owner and the Additional Insureds from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract Documents and shall survive the term or earlier termination of the Contract.

§ 11.1.7 Environmental Impairment Liability (Pollution Insurance) (EIL): All Contractors and Subcontractors involved with the removal and/or abatement of pollutants (including but not limited to asbestos abatement contractors, lead abatement contractors, roofing contractors, tank removal contractors) are required to maintain a minimum of \$2,000,000 EIL coverage. Owner and all other parties required by this Contract to be Additional Insureds and all others identified by Owner as such, shall be included as Additional Insured son any EIL policy on a primary and non-contributing basis.

§ 11.1.8 The Contractor assumes responsibility for all injury or destruction of the Contractor's and Subcontractors' materials, tools, machinery, equipment, appliances, shoring, scaffolding, and personal property of Contractor's and Subcontractors' employees from whatever cause arises. Any policy of insurance secured covering the Contractor's or Subcontractors' property leased or hired by them and any policy of insurance covering the Contractor or Subcontractors against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

§ 11.1.9 Additional Insured/Certificate Holder. The Contractor shall cause the commercial liability and other coverage required by the Contract to include the following as Additional Insureds:

- (i) Lakeland Central School District;
- (ii) Members of the Board of Education, officers and employees, of the Lakeland Central School District;
- (iii) The Construction Manager
- (iv) The Architect ; and

Contractor shall also add any other entities and/or individuals as may be required by Owner as Additional Insured.

The certificate holder shall be Lakeland Central School District unless Owner requires otherwise.

Contractor shall provide an Additional Insured endorsement that expressly names each of the above identified Additional Insureds (non-blanket) and shall ensure that the endorsement does not include language that requires an Additional Insured to have a written contract with the named insured for coverage to apply.

Additional insured status shall be provided by standard or other endorsements that extend coverage to the District for ongoing operations (CG 20 38) and products and completed operations (CG 20 37). The decision to accept an endorsement rest solely with the District. A completed copy of the endorsements must be attached to the Certificate of Insurance

§ 11.1.10 Certificates of insurance acceptable to the Construction Manager and Owner shall be provided to the Construction Manager and filed with the Owner prior to commencement of the Work. A fully completed New York Construction Certificate of Liability Insurance Addendum (ACORD 855 2014/15) must be included with the certificates of insurance. The certificates and the insurance policies shall contain a provision that coverages afforded under the policies will not be allowed to be materially changed or canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Owner via Certified/Registered Mail. If any of the foregoing insurance coverages are required to remain in force after final payment, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

§ 11.1.11 The Contractor acknowledges that its failure to obtain or keep current the required insurance coverage shall constitute a material breach of contract and subjects the Contractor to liability for damages the Owner (or others, including without limitation the other Additional Insured) sustains as a result of such breach. In addition, the Contractor shall be responsible to the fullest extent permitted by law for the indemnification to the Owner and all Additional Insured of any and all costs associated with such lapse in coverage, including but not limited to reasonable attorneys' fees (and this indemnification obligation shall survive the term or earlier termination of the Contract).

§ 11.1.12 The amount of insurance required by the Contract shall not be construed to be a limitation of the liability of on the part of the Contractor or any of its Subcontractors.

§ 11.1.13 No act or omission of any insurance agent, broker, or insurance company representative shall relieve Contractor of any of its obligations under this Contract.

§ 11.1.14 Notwithstanding anything in Section 11.3 and its subsections to the contrary, the Contractor shall provide insurance coverage for portions of the Work stored off the site, in transit, and stored on the site but not incorporated into the Work on a full replacement cost basis. The Contractor is responsible for all deductible amounts.

§ 11.1.15 Subcontractors are subject to the same insurance terms and conditions as stated herein, in Article 11, for Contractors and must submit proof of same to the Contractor, prior to start of any work. The Owner delegates its responsibility with respect to ensuring that each and every Subcontractor of Contractor complies with the insurance requirements and the Contractor is solely responsible if any Subcontractor does not comply with these requirements.

§ 11.1.16 In the event the Contractor fails to obtain the required certificates of insurance from the Subcontractor and a claim is made or suffered, the Contractor shall indemnify, defend and hold harmless the Owner, its officers, employees and agents, from any and all claims for which the required insurance would have provided coverage. This indemnity obligation is in addition to any other indemnity obligation provided in the Contract Documents, and shall survive the term or earlier termination of the Contract.

§ 11.1.17 The Contractor assumes responsibility for all injury or destruction of the Contractor's and Subcontractors' materials, tools, machinery, equipment, appliances, shoring, scaffolding, and personal property of Contractor's and Subcontractors' employees from whatever cause arises. Any policy of insurance secured covering the Contractor's or Subcontractors' property leased or hired by them and any policy of insurance covering the Contractor or Subcontractors against physical loss or damage to such property shall include an endorsement waiving the right of subrogation against the Owner for any loss or damage to such property.

§ 11.2.1 Liability Insurance. The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located: the Owner's usual liability insurance.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform both the Contractor and the Construction Manager, separately and in writing, prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto. Property Insurance. The Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in New York State, property insurance written on a builder's risk "all risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in the Contract Documents or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.2 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.2.2.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any

applicable legal requirements, and shall cover reasonable compensation for the Architect's, Contractor's, and Construction Manager's services and expenses required as a result of such insured loss.

§ 11.2.2.2 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles, unless the underlying loss is caused in whole or in part by Contractor or any of its Subcontractors or anyone for whom either of them are responsible, then, the Contractor shall pay such costs of deductibles.

§ 11.2.3 ~~Notice of Cancellation or Expiration of Owner's Required Property Insurance.~~ Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice directly to the Contractor, and separately to the Construction Manager, of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance. **Loss of Use Insurance.** The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused.

§ 11.2.3.1 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.2.3.2 If during the Project construction period the Owner insures properties, real or personal or both, adjoining or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

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§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Construction Manager and Construction Manager's consultants; (3) the Architect and Architect's consultants; (4) other Contractors and any of their subcontractors, sub-subcontractors, agents, and employees; and (5) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance ~~required by~~ obtained by the Owner pursuant to the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. ~~The Owner and Contractor may have to the proceeds of such insurance held by the Owner as fiduciary.~~ The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Construction Manager, Construction Manager's consultants, Architect, Architect's consultants, other Contractors, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this Section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property. To the extent that a waiver of subrogation is unavailable to the Owner, and the absence of such right of subrogation or the Owner's giving such a waiver would constitute a breach of its insurance policy; then as to the Owner this Section 11.3.5 shall be of no force or effect and no such waiver of subrogation shall be required of Owner

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in

accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

A loss insured under the Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.3.7. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner 3

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor, Architect, and Construction Manager for loss of use of the Owner's property, due to fire or other hazards however caused.

§ 11.3.7 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five (5) days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement.

§ 11.5 Adjustment and Settlement of Insured Loss**Performance Bond and Payment Bond**

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Construction Manager, Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Construction Manager, Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

The Contractor shall furnish a Performance Bond and a Labor and Material Payment Bond each to be in an amount equal to one hundred percent (100%) of the Contract Sum meeting all statutory requirements of the State of New York, in form and substance satisfactory to the Owner and, without limitation, complying with the following specific requirements:

- .1 Except as otherwise required by statute, the form and substance of such bonds shall be satisfactory to the Owner in the Owner's sole judgment;
- .2 Bonds shall be executed by a responsible surety licensed in the jurisdiction of the Work with an AM Best's rating of no less than A/XII and shall remain in effect for a period not less than two (2) years following the date of Substantial Completion or the time required to resolve any items of incomplete Work and the payment of any disputed amounts, whichever time period is longer;
- .3 The Performance Bond and the Labor and Material Payment Bond shall each be in an amount equal to the Contract Sum;
- .4 The Contractor shall require the Attorney-in-Fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his power of attorney indicating the monetary limit of such power;
- .5 Every Bond under this Section 11.5.1 must display the Surety's Bond Number. A Rider including the following provisions shall be attached to each Bond:
 - (1) Surety hereby agrees that it consents to and waives notice of any addition, alteration, omission, change, or other modification of the Contract Documents. Such addition, alteration, change, extension of time, or other modification of the Contract Documents, or a forbearance on the part of either the Owner or the Contractor to the other, shall not release the Surety of its obligations hereunder and notice to the Surety of such matters is hereby waived.
 - (2) Surety further agrees that in event of any default by the Owner in the performance of the Owner's obligations to the Contractor under the Contract, the Contractor or Surety shall cause written notice of such default (specifying said default in detail) to be given to the Owner, and the Owner shall have thirty (30) days from time after receipt of such notice within which to cure such default, or such additional reasonable period of time as may be required if the nature of such default is such that it cannot be cured within thirty (30) days. Such Notice of Default shall be sent by certified or

registered U.S. Mail, return receipt requested, first class postage prepaid, to the Construction Manager, Architect and the Owner.

- (3) Notwithstanding anything in the Bond to the contrary, the Performance Bond shall not contain a condition that any meeting must be scheduled among Owner, Contractor and its surety, or any combination of them, prior to Owner declaring Contractor in default or prior to Owner terminating Contractor's Contract. Any such language in a Performance Bond shall be null, void and unenforceable.
- (4) Surety and Contractor shall be liable for the additional costs and expenses incurred by the Owner in relation to the default of the Contractor including but not limited to architectural, engineering and/or consultants fees and disbursements.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work. Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

§ 11.5.3 The Contractor shall deliver the required bonds to the Owner prior to beginning construction activity at the site, but no later than seven (7) days after execution of the Contract. Said bonds shall be issued on form AIA Document A312.

§ 11.5.4 The Owner may, in the Owner's sole discretion and without prior notice to the Contractor, inform surety of the progress of the Contractor's Work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Contractor's Work.

§ 11.5.5 If the surety on any Bond furnished by the Contractor is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of this Article, the Contractor shall within ten (10) days thereafter substitute another Performance and Payment Bond and surety, both of which must be acceptable to the Owner.

§ 11.5.6 The Contractor shall keep the surety informed of the progress of the Work, and, where necessary, obtain the surety's consent to, or waiver of: (1) notice of changes in the Work; (2) request for reduction or release of retention; (3) request for final payment; and (4) any other material required by the surety. The Owner, Construction Manager, and Architect shall be notified by the Contractor, in writing, of all communications with the surety. The Owner may, in the Owner's sole discretion, inform surety of the progress of the Work and obtain consents as necessary to protect the Owner's rights, interest, privileges and benefits under and pursuant to any bond issued in connection with the Work.

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§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one (1) year after the date of Substantial Completion of the Work or designated portion thereof, or after the date for commencement of warranties established under ~~Section 9.9.1, Article 9,~~ or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. ~~During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty.~~ If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner, Construction Manager or Architect, the Owner may correct it in accordance with Section ~~2.5-2.4~~. The right of the Owner to require

Contractor to correct Work not in accordance with the requirements of the Contract Documents pursuant to this paragraph shall not give rise to any duty on the part of the Owner to exercise this right for its benefit or the benefit of the Contractor or any other person or entity.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work. Without limitation to Section 12.2.2.1, the Contractor shall also furnish maintenance and 24-hour call back service for the equipment provided by it for a period of three (3) months after Final Completion and acceptance of the Work. This Work shall include all necessary adjustments, greasing, oiling, supplies, and parts to keep any supplied/installed equipment in proper operation except such parts made necessary by misuse, accidents or negligence not caused by the Contractor or any of its Subcontractors.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.2.2.3. In the judgment of the Owner should any material, equipment or systems require corrective work because of defects in material or workmanship within the two (2) year warranty period, or extended warranty periods, the Contractor shall complete all required corrective work within forty-five (45) days of notice. In the event the Contractor does not, in accordance with the terms and provisions of the Contract, complete all corrective work within forty-five (45) days, or comply with and fulfill their warranty obligations, the Owner will notify the bonding company to have such work and/or obligations performed at no additional cost to the Owner at the expense of the bonding company and/or the Contractor. The obligations of the Contractor under the terms and provisions of the Contract shall not however be limited to the surety retained by the Owner pursuant to the provisions of the Contract.

§ 12.2.2.4 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.5 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.6 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.7 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner, Separate Contractors, or other Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.8 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be

sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be ~~effected~~ affected whether or not final payment has been made.

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~~The Contract shall be governed by the law of the place where the Project is located excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4 is.~~ The parties expressly agree that any claim, dispute, or other controversy of any nature arising out of the Contract or performance of the Work, shall be commenced and maintained in New York State Supreme Court located in Westchester County, New York.

...

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract. The Contractor shall not assign any monies due or to become due to it under the Contract without the prior written consent of the Owner.

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§ 13.3 Rights and Remedies**Written Notice**

~~§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.~~

~~§ 13.3.2 No action or failure to act by the Owner, Construction Manager, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.~~

§ 13.3.1 All notices and other communications required to be in writing (including without limitation all notices relating to Claims, defaults or termination) shall be deemed to have been duly given or delivered: (i) if delivered by hand to the addresses below against a signed receipt, upon delivery; (ii) if deposited with a nationally recognized and reputable overnight delivery service for overnight delivery to the addresses below, upon one (1) day following deposit with such overnight delivery service (with proof tender); or (iii) if by certified mail, return receipt requested, postage prepaid addressed to the addresses below; upon three (3) business days after it is posted with the United States Postal Service. If the delivery of notice above shall fall on a non-business day or holiday, then delivery of the notice shall be deemed to have been made on the next following business day. All such notices shall be delivered to:

(i) If to Owner, addressed to:

Lakeland Central School District
1086 East Main Street
Shrub Oak, NY 10588
Attn: Dr. Karen Gagliardi, Superintendent of Schools and
School Business Administrator

with a copy to Construction Manager:

Triton Construction, Inc.
1279 NY-300, 1st Floor
Newburgh, New York 12550
Att:

and

(ii) if to Contractor, addressed to:

[TO BE INCLUDED]

If notice is tendered under the provisions of this Section 13.3 and is refused by the intended recipient of the notice, the notice shall nonetheless be considered to have been given and shall be effective as set forth above.

Either party may designate from time to time, by an appropriate writing, written notice to the other parties.

§ 13.4 Tests and Inspections Rights and Remedies

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require. Except as expressly provided in the Contract Documents, duties and obligations imposed by the Contract Documents on Contractor and rights and remedies available to the Owner thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law or in equity, or by other agreement, and such rights and remedies shall survive acceptance of the Work and/or termination of the Contract Documents.

§ 13.4.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense. No action or failure to act by the Owner, Construction Manager, or Architect, shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.4.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest Tests and Inspections

§ 13.5.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Construction Manager and Architect timely notice of when and where tests and inspections are to be made so that the Construction Manager and Architect may

be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.5.2 If the Construction Manager, Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.5.1, the Construction Manager and Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Construction Manager and Architect of when and where tests and inspections are to be made so that the Construction Manager and Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If procedures for testing, inspection, or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Construction Manager's and Architect's services and expenses, and also including Owner's attorneys' fees, costs and expenses, arising out of or related to same, shall be at the Contractor's expense. The Contractor agrees that the cost of testing services required for the convenience of the Contractor in his scheduling and performance of the Work, and the cost of testing services relating to remedial operations performed to correct deficiencies in the Work shall be borne by the Contractor

§ 13.5.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Construction Manager for transmittal to the Architect.

§ 13.5.5 If the Construction Manager or Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Construction Manager or Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5.7 Upon request the Contractor shall deliver test samples of any of the materials specified in these specifications to an independent testing agency. The Owner shall pay for the test of samples, which are found to conform to the specifications. The Contractor shall pay for the tests of samples, which do not conform to the specifications. This shall not relieve the Contractor of its obligations to perform specific tests described elsewhere in these specifications.

§ 13.5.8 Where the specifications require part of the work to be specially tested and approved, it shall not be tested or covered up without timely notice thereof or consent thereto by Owner and Construction Manager. Should any part of the work be covered up without notice, approval or consent, such part of the work shall be uncovered for examination at the Contractor's expense if the Owner shall so require.

§ 13.5.9 Where operating tests are specified, the Contractor shall test the work as it progresses, on its own account, and shall make satisfactory preliminary tests in all cases before applying for official tests.

§ 13.5.10 Tests shall be made in the manner specified, for the different branches of the work. Each test shall be made on the entire system for which such test is required, wherever practical. In case it is necessary to test portions of the work independently, the Contractor shall do so.

§ 13.5.11 Should defects appear, they shall be corrected by the Contractor and the test repeated until the installation is acceptable.

§ 13.5.12 When notice of tests is to be given to the Architect, it shall also be given to the Construction Manager.

§ 13.6 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due ~~at the rate the parties agree upon in writing or, in the absence thereof, at the legal~~ at the legal municipal rate prevailing from time to time at the place where the Project is located.

§ 13.7 Time Limits on Contractor's Claims

The Contractor shall commence all Claims and causes of action, including without limitation all notice requirements relating to Claims, whether in contract, tort, or otherwise, against the Owner arising out of or related to the Contract in strict accordance with the requirements of the Contract Documents (including without limitation strict compliance with all conditions precedent to the making of such Claims as required by the Contract Documents) and as required by applicable law, including without limitation within all applicable time periods specified by applicable law. The Contractor waives all claims and causes of action not commenced in accordance with this Section 13.7. Notwithstanding anything herein or elsewhere in the Contract Documents to the contrary, Contractor shall absolutely and strictly comply with New York State Education Law §3813.

§ 13.8 The Owner shall not be responsible for damages or for loss of anticipated profits or any other damages whatsoever on Work not performed on account of any termination of the Contractor by the Owner or by virtue of the Owner's exercise of its right to take over the Contractor's Work pursuant to this Contract.

§ 13.9 The Owner shall not be liable to the Contractor for punitive damages on account of its termination of the Contractor or any other alleged breach of the Contract between Owner and the Contractor, and the Contractor hereby expressly waives its right to claim such damages against the Owner.

§ 13.10 The Contractor hereby expressly waives any rights it may have in law or in equity to lost bonding capacity as a result of any of the actions of the Owner, the Architect or the Construction Manager taken in connection with the Contractor's Work on the Project.

§ 13.11 The Contractor agrees and acknowledges that payments for the Work have been obtained through obligations or bonds which have been sold after public referendum. In the event the Work is suspended or canceled as a result of the order of any court, agency, department, entity or individual having jurisdiction, or in the event the Work is suspended or canceled due to the fact that a court, agency, department, entity or individual having jurisdiction has issued an order, the result of which is that the aforesaid obligations or bonds are no longer available for payment for the Work, the Contractor expressly agrees that it shall be solely entitled to payment for Work accomplished until a notice of suspension or cancellation is served upon it. The Contractor expressly waives any and all rights to institute an action, claim, cause of action or similar for any damages it may suffer as a result of the suspension or cancellation of the Work and/or its Contract pursuant to this section.

§ 13.12 It is the intent and understanding of the parties to this Contract that each and every provision of law required to be inserted in this Contract shall be and is inserted herein. Furthermore, it is hereby stipulated that every such provision is to be deemed to be inserted herein, and if, through mistake or otherwise, any such provision is not inserted, or is not inserted in correct form, then this Contract shall forthwith be deemed amended by such insertion so as to comply strictly with the law.

§ 13.13 Liens. At all times, Contractor shall fully and promptly pay and discharge any and all commitments and claims and to the fullest extent permitted by law, wholly defend, protect, indemnify and hold harmless Owner (and its board members, officers, directors, agents, servants, employees) from and against any and all mechanics' or materialmens' liens or claims by Subcontractors or others in connection with the Work and against all damages, liability, cost and expense arising out of or related thereto (whether direct or consequential notwithstanding any provisions of the Contract to the contrary) and including all reasonable attorneys' fees (and also including, without limitation, attorneys' fees and expenses incurred in any appeals, or any enforcement of the obligations under this provision, or enforcement of any judgment and collection hereunder). In connection with the foregoing, all mechanics' or materialmens' liens which relate to the Work of this Contract shall be removed, discharged or bonded by Contractor within thirty (30) days of notice from Owner. If Contractor fails to commence the process to discharge or remove the lien within five (5) business days after notice of the lien, and notify Owner thereof in writing, or if Contractor thereafter fails to diligently prosecute such discharge or removal to the satisfaction of Owner in its sole discretion, Owner shall, without limitation to Contractor's full indemnification obligation under this Section, have the right to remove, discharge or bond such lien and deduct the cost thereof (including the amount paid or bonded plus reasonable attorneys' fees and disbursements) from any payment due the Contractor.

§ 13.14 No assignment, transfer, conveyance, subletting or other disposition of all or any part of the Contract, or of any of the moneys due or to become due thereunder, or of any right, title or interest therein by Contractor to any person or entity will be permitted or allowed without the previous consent, in writing, of the Owner.

§ 13.15 Equal Opportunity

§ 13.15.1 The Contractor shall maintain policies of employment as follows:

- .1** The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, gender, or national origin, or any other applicable discriminatory classification in state or federal law. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, color, sex, gender, or national origin, or any other applicable discriminatory classification under state or federal law. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notice setting forth the policies of non-discrimination.
- .2** The Contractor and the Contractor's subcontractors shall, in all solicitations or advertisement for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, gender, or national origin, and other applicable discriminatory classifications under state or federal law.

§ 13.16 Wage Rates

§ 13.16.1 The Contractor shall comply with Prevailing Wage Rates issued and periodically updated, by the New York State Department of Labor, for the location and duration of the Project.

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§ 14.1.1 The Contractor may terminate the Contract in the manner provided hereinbelow if the Work is stopped for a period of ~~30~~ninety (90) consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, under direct or indirect contract with the Contractor, for any of the following reasons:

...

- .2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or
- .3** ~~Because the Construction Manager has not certified or the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or~~
- .4** ~~The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2; Contractor has appropriately stopped Work pursuant to Section 9.7 above;~~

§ 14.1.2 The Contractor may terminate the Contract in the manner provided hereinbelow if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, under direct or indirect contract with the Contractor, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon ~~seven~~fourteen (14) days' notice to the Owner, Construction Manager and Architect, terminate the Contract unless (but not in the instance the event in Section 14.1.2 is applicable) such reason is cured prior to the expiration of said notice period (or if such breach by its nature cannot be cured within such notice period, Owner has diligently commenced to cure such breach and in good faith continues to complete such cure) and only recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination. overhead and profit at a rate not greater than 10% on such Work through the effective date of termination in compliance with the Contract Documents, it being understood and agreed, however, that that Owner shall incur no other liability to Contractor by reason of such termination, with it being further understood and agreed that the Owner shall not be responsible for or required to pay Contractor for any costs or damages for loss of anticipated overhead and/or profit on Work not performed on account of any termination described in this Section 14.1 and its subsections.

- .1 ~~repeatedly~~-refuses or fails to supply enough properly skilled workers or proper materials;
- ...
- .3 ~~repeatedly~~-disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority;
- .4 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor's ability to complete the Work in compliance with all requirement of the Contract Documents;
- .5 fails to keep the Project free from strikes, work stoppages, slowdowns, lockouts, or other disruptive activity;
- ~~.4 otherwise is guilty of substantial breach of a provision of 6.~~ is adjudged a bankrupt or insolvent, or make a general assignment for the benefit of a Contractor's creditors, a trustee or receiver is appointed for Contractor or for any of its property, or files a petition to take advantage of any debtor's act or to reorganize under bankruptcy or similar laws;
7. refuses or fails to correct deficient Work performed by it;
8. disregards the instructions of the Construction Manager, Architect or owner (when such instructions are based on the requirements of the Contract Documents); or
- .9 otherwise does not fully comply with the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, after consultation with the Construction Manager, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, ~~if any, seven days' surety~~ seven (7) days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Take possession of materials stored off-site by the Contractor;

...

- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. ~~Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.~~

The notice provision in this Section 14.2.2 is for informational purposes only and it is expressly agreed that the Contractor shall have no right to cure.

...

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Construction Manager's and Architect's (including their consultants') services and expenses made necessary thereby, and including Owner's attorneys' fees (including for appeals and enforcement of the obligations under this provision or enforcement of any judgment and collection hereunder) and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages (including Owner's attorneys' fees described herein) exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall, upon application, be certified by the Initial Decision Maker after consultation with the Construction Manager, and this obligation for payment shall survive termination of the Contract.

...

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine. The Contractor shall continue to perform that portion of its Work that has not been suspended, delayed, or interrupted, and shall properly protect and secure the portion of its Work so suspended, delayed or interrupted.

§ 14.3.2 ~~The Contract Sum and the Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit.~~ 14.3.1, it being expressly agreed that the Owner shall incur no liability to Contractor by reason of such suspension, delay or interruption except that Contractor may request an extension of its time to complete its Work in accordance with the Contract Documents. No adjustment shall be made to the extent:

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of this Contract.
- .3 Contractor waives its rights to an adjustment by operation of any other provision of the Contract Documents

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§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause. Termination shall be effective immediately upon delivery of Owner's written notice to Contractor unless specified otherwise by Owner in writing in such notice.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall

...

- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice or for Subcontractors for which Owner accepts assignment as provided in the Contract Documents and specified in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. If the Contractor's Work is so terminated, the Owner shall not be liable to the Contractor by reason of such termination except that the Contractor shall be entitled to payment for the Work it has properly executed through the effective date of termination in compliance with the Contract Documents, including reasonable overhead and profit on such Work executed (with the basis for such payment as provided in the Contract Documents); it being agreed and understood, however, that Owner shall incur no other liability to Contractor by reason of such termination, with it being further agreed and understood that the Owner shall not be responsible for or required to pay Contractor for any costs or damages for loss of anticipated overhead and/or profit on Work not performed on account of any termination described in this Section 14.4 and its subsections

...

§ 15.1.1 Definition. A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. ~~This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.~~

§ 15.1.2 Time Limits on Claims ~~Time Limits on Contractor's Claims/Notice of Claims~~

~~The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2. It is a condition precedent to Contractor's ability to pursue any Claim that written notice of the Claim by Contractor in strict compliance with the requirements of this Section 15.1.2 must be initiated by written notice to the Owner with a copy sent to the Construction Manager and Architect, within twenty-one (21) days after occurrence of the event giving rise to such Claim or within twenty-one (21) days after the Contractor first recognizes the condition giving rise to the~~

Claim, whichever is later so that the Owner can properly investigate the Claim, TIME IS EXPRESSLY OF THE ESSENCE WITH RESPECT TO CONTRACTOR'S GIVING OF NOTICE OF CLAIM TO OWNER AS PROVIDED HEREIN AS A CONDITION PRECEDENT TO ITS ABILITY TO ASSERT OR OTHERWISE PURSUE ANY CLAIM. The notice of Claim shall set forth: (1) the reasons for which the Contractor believes additional compensation will or may be due or additional time should be granted; (2) the nature of the costs involved; (3) the Contractor's plan for mitigating such costs; (4) if ascertainable, the amount of the potential Claim. For any Claim initiated after the time limit set forth in this Section 15.1.2 or otherwise not in compliance with the information required by this Section 15.1.2, Contractor shall be deemed to have expressly waived any such Claim and shall forfeit any rights that it may have pursuant to this Contract or in law or equity to ever assert or otherwise pursue such Claim. The requirements of this Section are in addition to Contractor's obligation to strictly comply with New York State Education Law §3813.

§ 15.1.3 ~~Notice of Claims~~Continuing Contract Performance

§ 15.1.3.1 ~~Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Construction Manager and Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents. The Architect will prepare Change Orders and issue Certificates for Payment in accordance with the decisions of the Initial Decision Maker. It is understood~~
That a violation of this provision by Contractor shall cause irreparable harm to the Owner.

§ 15.1.3.2 ~~Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.~~

§ 15.1.4 ~~Continuing Contract Performance~~Claims for Additional Cost. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided in Section 15.1.2 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.4.1 ~~Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.~~

§ 15.1.4.2 ~~The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.~~

§ 15.1.5 ~~Claims for Additional Cost.~~ If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

Claims for Additional Time

§ 15.1.5.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided herein shall be given as required by Article 8 hereinabove. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.5.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.5.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time

claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.

§ 15.1.5.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the number of causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

§ 15.1.6 ~~Claims for Additional Time~~**Waiver of Claims for Consequential Damages.** The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.6 shall be deemed to preclude award of liquidated Delay Damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 15.1.7 ~~Waiver of Claims for Consequential Damages.~~ The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit except anticipated profit arising directly from the Work. The Construction Manager, Architect and/or the Owner may, but are not obligated to, notify the Surety of the nature and/or estimated amount of any Claim that the Owner or others may have against Contractor. If such Claim relates to a possibility of a Contractor's default/termination, the Construction Manager, Architect, and/or Owner may, but are not obligated to notify the Surety and request the Surety's assistance in resolving the controversy.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.1.8 No Damage for Delay: Contractor acknowledges that delays are common to construction projects of this nature, that the Drawings and Specifications and other Contract Documents for the Project may be incomplete and/or contain errors and discrepancies which will necessitate the issuance of Change Orders to correct existing deficiencies, that changes to the Drawings and Specifications often require extensive and time consuming reviews by many individuals before they may be approved or ratified, that the processing of Shop Drawings may be inordinately slow, that there may be delay, impact, hindrance or interference from other Prime Contractors or other separate contractors retained by Owner or visitors to the Project site or from directions given or not given by the Construction Manager, Owner or Architect, or any of their consultants, including scheduling and coordination of the Work, and that Contractor may encounter adverse weather conditions or force majeure events, whether or not foreseeable or anticipated (all of which shall be deemed "Contemplated Delays"). Accordingly, and notwithstanding any other provisions of this Subcontract, except to the extent expressly prohibited by law, the Contractor expressly agrees not to make and hereby waives any Claim, and contractually assumes the risk of, any and all loss and expense and damages for delay, interference, hindrance or

impact to the progress of its Work, loss of productivity or efficiency, loss of profit, extended home office overhead or any increased costs (including but not limited to increased labor or material costs), for or on account of any delay, obstruction, interference or hindrance, or other impacts to the performance of its Work for any reason whatsoever, including without limitation Contemplated Delays, it being understood the risk for all loss and expense for delay having been anticipated by Contractor's execution of this Subcontract. IT IS EMPHASIZED THAT NO MONETARY RECOVERY MAY BE OBTAINED BY THE CONTRACTOR FOR ANY DELAY AGAINST THE OWNER, OR CONSTRUCTION MANAGER OR ARCHITECT BASED ON ANY REASON AND THAT THE CONTRACTOR'S SOLE REMEDY, IF APPROPRIATE, IS ADDITIONAL TIME FOR COMPLETION OF THE WORK, the amount of which shall be subject to the procedures set forth in this Contract. The intent of this section is to avoid protracted costly litigation as to whether delays, should they occur, were anticipated or unanticipated, foreseeable or unforeseeable, reasonable or unreasonable or as to whether or not they were the fault of Contractor, other Prime Contractors, Owner, Construction Manager, Architect, other contractors or their representatives. Contractor agrees that all such delays, regardless of duration, are within the contemplation of the parties. Contractor has certified that it has considered, as an experienced contractor, the risk of encountering such delays in reaching agreement with Owner on the Contract Sum for the Work.

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§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. Claim arising prior to the date of final payment is due. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

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§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, Claim or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties, the Construction Manager, and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

...

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, Kim Ruebel, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 12:54:31 ET on 09/03/2024 under Order No. 3104241246 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A232™ – 2019, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Lakeland Central School Dist

Thomas Farlow, Project Manager
Tetra Tech Archs & Engs
10 Brown Road
Ithaca NY 14850

Schedule Year 2024 through 2025
Date Requested 10/10/2023
PRC# 2023012134

Location 1086 East Main Street
Project ID# 276721-23001
Project Type Reconstruction to Multiple School Buildings - Phase 1

PREVAILING WAGE SCHEDULE FOR ARTICLE 8 PUBLIC WORK PROJECT

Attached is the current schedule(s) of the prevailing wage rates and prevailing hourly supplements for the project referenced above. A unique Prevailing Wage Case Number (PRC#) has been assigned to the schedule(s) for your project.

The schedule is effective from July 2024 through June 2025. All updates, corrections, posted on the 1st business day of each month, and future copies of the annual determination are available on the Department's website www.labor.ny.gov. Updated PDF copies of your schedule can be accessed by entering your assigned PRC# at the proper location on the website.

It is the responsibility of the contracting agency or its agent to annex and make part, the attached schedule, to the specifications for this project, when it is advertised for bids and /or to forward said schedules to the successful bidder(s), immediately upon receipt, in order to insure the proper payment of wages.

Please refer to the "General Provisions of Laws Covering Workers on Public Work Contracts" provided with this schedule, for the specific details relating to other responsibilities of the Department of Jurisdiction.

Upon completion or cancellation of this project, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

NOTICE OF COMPLETION / CANCELLATION OF PROJECT

Date Completed: _____ Date Cancelled: _____

Name & Title of Representative: _____

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

General Provisions of Laws Covering Workers on Article 8 Public Work Contracts

Introduction

The Labor Law requires public work contractors and subcontractors to pay laborers, workers, or mechanics employed in the performance of a public work contract not less than the prevailing rate of wage and supplements (fringe benefits) in the locality where the work is performed.

Responsibilities of the Department of Jurisdiction

A Department of Jurisdiction (Contracting Agency) includes a state department, agency, board or commission; a county, city, town or village; a school district, board of education or board of cooperative educational services; a sewer, water, fire, improvement and other district corporation; a public benefit corporation; and a public authority awarding a public work contract.

The Department of Jurisdiction (Contracting Agency) awarding a public work contract **MUST** obtain a Prevailing Rate Schedule listing the hourly rates of wages and supplements due the workers to be employed on a public work project. This schedule may be obtained by completing and forwarding a "Request for wage and Supplement Information" form (PW 39) to the Bureau of Public Work. The Prevailing Rate Schedule **MUST** be included in the specifications for the contract to be awarded and is deemed part of the public work contract.

Upon the awarding of the contract, the law requires that the Department of Jurisdiction (Contracting Agency) furnish the following information to the Bureau: the name and address of the contractor, the date the contract was let and the approximate dollar value of the contract. To facilitate compliance with this provision of the Labor Law, a copy of the Department's "Notice of Contract Award" form (PW 16) is provided with the original Prevailing Rate Schedule.

The Department of Jurisdiction (Contracting Agency) is required to notify the Bureau of the completion or cancellation of any public work project. The Department's PW 200 form is provided for that purpose.

Both the PW 16 and PW 200 forms are available for completion [online](#).

Hours

No laborer, worker, or mechanic in the employ of a contractor or subcontractor engaged in the performance of any public work project shall be permitted to work more than eight hours in any day or more than five days in any week, except in cases of extraordinary emergency. The contractor and the Department of Jurisdiction (Contracting Agency) may apply to the Bureau of Public Work for a dispensation permitting workers to work additional hours or days per week on a particular public work project.

Wages and Supplements

The wages and supplements to be paid and/or provided to laborers, workers, and mechanics employed on a public work project shall be not less than those listed in the current Prevailing Rate Schedule for the locality where the work is performed. If a prime contractor on a public work project has not been provided with a Prevailing Rate Schedule, the contractor must notify the Department of Jurisdiction (Contracting Agency) who in turn must request an original Prevailing Rate Schedule from the Bureau of Public Work. Requests may be submitted by: mail to NYSDOL, Bureau of Public Work, State Office Bldg. Campus, Bldg. 12, Rm. 130, Albany, NY 12226; Fax to Bureau of Public Work (518) 485-1870; or electronically at the NYSDOL website www.labor.ny.gov.

Upon receiving the original schedule, the Department of Jurisdiction (Contracting Agency) is **REQUIRED** to provide complete copies to all prime contractors who in turn **MUST**, by law, provide copies of all applicable county schedules to each subcontractor and obtain from each subcontractor, an affidavit certifying such schedules were received. If the original schedule expired, the contractor may obtain a copy of the new annual determination from the NYSDOL website www.labor.ny.gov.

The Commissioner of Labor makes an annual determination of the prevailing rates. This determination is in effect from July 1st through June 30th of the following year. The annual determination is available on the NYSDOL website www.labor.ny.gov.

Payrolls and Payroll Records

Every contractor and subcontractor **MUST** keep original payrolls or transcripts subscribed and affirmed as true under penalty of perjury. As per Article 6 of the Labor law, contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records. At a minimum, payrolls must show the following information for each person employed on a public work project: Name, Address, Last 4 Digits of Social Security Number, Classification(s) in which the worker was employed, Hourly wage rate(s) paid, Supplements paid or provided, and Daily and weekly number of hours worked in each classification.

The filing of payrolls to the Department of Jurisdiction is a condition of payment. Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury. The Department of Jurisdiction (Contracting Agency) shall collect, review for facial validity, and maintain such payrolls.

In addition, the Commissioner of Labor may require contractors to furnish, with ten (10) days of a request, payroll records sworn to as their validity and accuracy for public work and private work. Payroll records include, but are not limited to time cards, work description sheets, proof that supplements were provided, cancelled payroll checks and payrolls. Failure to provide the requested information within the allotted ten (10) days will result in the withholding of up to 25% of the contract, not to exceed \$100,000.00. If the contractor or subcontractor does not maintain a place of business in New York State and the amount of the contract exceeds \$25,000.00, payroll records and certifications must be kept on the project worksite.

The prime contractor is responsible for any underpayments of prevailing wages or supplements by any subcontractor.

All contractors or their subcontractors shall provide to their subcontractors a copy of the Prevailing Rate Schedule specified in the public work contract as well as any subsequently issued schedules. A failure to provide these schedules by a contractor or subcontractor is a violation of Article 8, Section 220-a of the Labor Law.

All subcontractors engaged by a public work project contractor or its subcontractor, upon receipt of the original schedule and any subsequently issued schedules, shall provide to such contractor a verified statement attesting that the subcontractor has received the Prevailing Rate Schedule and will pay or provide the applicable rates of wages and supplements specified therein. (See NYS Labor Laws, Article 8 . Section 220-a).

Determination of Prevailing Wage and Supplement Rate Updates Applicable to All Counties

The wages and supplements contained in the annual determination become effective July 1st whether or not the new determination has been received by a given contractor. Care should be taken to review the rates for obvious errors. Any corrections should be brought to the Department's attention immediately. It is the responsibility of the public work contractor to use the proper rates. If there is a question on the proper classification to be used, please call the district office located nearest the project. Any errors in the annual determination will be corrected and posted to the NYSDOL website on the first business day of each month. Contractors are responsible for paying these updated rates as well, retroactive to July 1st.

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. To the extent possible, the Department posts rates in its possession that cover periods of time beyond the July 1st to June 30th time frame covered by a particular annual determination. Rates that extend beyond that instant time period are informational ONLY and may be updated in future annual determinations that actually cover the then appropriate July 1st to June 30th time period.

Withholding of Payments

When a complaint is filed with the Commissioner of Labor alleging the failure of a contractor or subcontractor to pay or provide the prevailing wages or supplements, or when the Commissioner of Labor believes that unpaid wages or supplements may be due, payments on the public work contract shall be withheld from the prime contractor in a sufficient amount to satisfy the alleged unpaid wages and supplements, including interest and civil penalty, pending a final determination.

When the Bureau of Public Work finds that a contractor or subcontractor on a public work project failed to pay or provide the requisite prevailing wages or supplements, the Bureau is authorized by Sections 220-b and 235.2 of the Labor Law to so notify the financial officer of the Department of Jurisdiction (Contracting Agency) that awarded the public work contract. Such officer MUST then withhold or cause to be withheld from any payment due the prime contractor on account of such contract the amount indicated by the Bureau as sufficient to satisfy the unpaid wages and supplements, including interest and any civil penalty that may be assessed by the Commissioner of Labor. The withholding continues until there is a final determination of the underpayment by the Commissioner of Labor or by the court in the event a legal proceeding is instituted for review of the determination of the Commissioner of Labor.

The Department of Jurisdiction (Contracting Agency) shall comply with this order of the Commissioner of Labor or of the court with respect to the release of the funds so withheld.

Summary of Notice Posting Requirements

The current Prevailing Rate Schedule must be posted in a prominent and accessible place on the site of the public work project. The prevailing wage schedule must be encased in, or constructed of, materials capable of withstanding adverse weather conditions and be titled "PREVAILING RATE OF WAGES" in letters no smaller than two (2) inches by two (2) inches.

The ["Public Work Project"](#) notice must be posted at the beginning of the performance of every public work contract, on each job site.

Every employer providing workers. compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers. Compensation Board in a conspicuous place on the jobsite.

Every employer subject to the NYS Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers, notices furnished by the State Division of Human Rights.

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the NYS Department of Labor.

Apprentices

Employees cannot be paid apprentice rates unless they are individually registered in a program registered with the NYS Commissioner of Labor. The allowable ratio of apprentices to journeyworkers in any craft classification can be no greater than the statewide building trade ratios promulgated by the Department of Labor and included with the Prevailing Rate Schedule. An employee listed on a payroll as an apprentice who is not registered as above or is performing work outside the classification of work for which the apprentice is indentured, must be paid the prevailing journeyworker's wage rate for the classification of work the employee is actually performing.

NYSDOL Labor Law, Article 8, Section 220-3, require that only apprentices individually registered with the NYS Department of Labor may be paid apprenticeship rates on a public work project. No other Federal or State Agency of office registers apprentices in New York State.

Persons wishing to verify the apprentice registration of any person must do so in writing by mail, to the NYSDOL Office of Employability Development / Apprenticeship Training, State Office Bldg. Campus, Bldg. 12, Albany, NY 12226 or by Fax to NYSDOL Apprenticeship Training (518) 457-7154. All requests for verification must include the name and social security number of the person for whom the information is requested.

The only conclusive proof of individual apprentice registration is written verification from the NYSDOL Apprenticeship Training Albany Central office. Neither Federal nor State Apprenticeship Training offices outside of Albany can provide conclusive registration information.

It should be noted that the existence of a registered apprenticeship program is not conclusive proof that any person is registered in that program. Furthermore, the existence or possession of wallet cards, identification cards, or copies of state forms is not conclusive proof of the registration of any person as an apprentice.

Interest and Penalties

In the event that an underpayment of wages and/or supplements is found:

- Interest shall be assessed at the rate then in effect as prescribed by the Superintendent of Banks pursuant to section 14-a of the Banking Law, per annum from the date of underpayment to the date restitution is made.
- A Civil Penalty may also be assessed, not to exceed 25% of the total of wages, supplements, and interest due.

Debarment

Any contractor or subcontractor and/or its successor shall be ineligible to submit a bid on or be awarded any public work contract or subcontract with any state, municipal corporation or public body for a period of five (5) years when:

- Two (2) willful determinations have been rendered against that contractor or subcontractor and/or its successor within any consecutive six (6) year period.
- There is any willful determination that involves the falsification of payroll records or the kickback of wages or supplements.

Criminal Sanctions

Willful violations of the Prevailing Wage Law (Article 8 of the Labor Law) may be a felony punishable by fine or imprisonment of up to 15 years, or both.

Discrimination

No employee or applicant for employment may be discriminated against on account of age, race, creed, color, national origin, sex, disability or marital status.

No contractor, subcontractor nor any person acting on its behalf, shall by reason of race, creed, color, disability, sex or national origin discriminate against any citizen of the State of New York who is qualified and available to perform the work to which the employment relates (NYS Labor Law, Article 8, Section 220-e(a)).

No contractor, subcontractor, nor any person acting on its behalf, shall in any manner, discriminate against or intimidate any employee on account of race, creed, color, disability, sex, or national origin (NYS Labor Law, Article 8, Section 220-e(b)).

The Human Rights Law also prohibits discrimination in employment because of age, marital status, or religion.

There may be deducted from the amount payable to the contractor under the contract a penalty of \$50.00 for each calendar day during which such person was discriminated against or intimidated in violation of the provision of the contract (NYS Labor Law, Article 8, Section 220-e(c)).

The contract may be cancelled or terminated by the State or municipality. All monies due or to become due thereunder may be forfeited for a second or any subsequent violation of the terms or conditions of the anti-discrimination sections of the contract (NYS Labor Law, Article 8, Section 220-e(d)).

Every employer subject to the New York State Human Rights Law must conspicuously post at its offices, places of employment, or employment training centers notices furnished by the State Division of Human Rights.

Workers' Compensation

In accordance with Section 142 of the State Finance Law, the contractor shall maintain coverage during the life of the contract for the benefit of such employees as required by the provisions of the New York State Workers' Compensation Law.

A contractor who is awarded a public work contract must provide proof of workers' compensation coverage prior to being allowed to begin work.

The insurance policy must be issued by a company authorized to provide workers' compensation coverage in New York State. Proof of coverage must be on form C-105.2 (Certificate of Workers' Compensation Insurance) and must name this agency as a certificate holder.

If New York State coverage is added to an existing out-of-state policy, it can only be added to a policy from a company authorized to write workers' compensation coverage in this state. The coverage must be listed under item 3A of the information page.

The contractor must maintain proof that subcontractors doing work covered under this contract secured and maintained a workers' compensation policy for all employees working in New York State.

Every employer providing worker's compensation insurance and disability benefits must post notices of such coverage in the format prescribed by the Workers' Compensation Board in a conspicuous place on the jobsite.

Unemployment Insurance

Employers liable for contributions under the Unemployment Insurance Law must conspicuously post on the jobsite notices furnished by the New York State Department of Labor.



Kathy Hochul, Governor

Roberta Reardon, Commissioner

Lakeland Central School Dist
Thomas Farlow, Project Manager
Tetra Tech Archs & Engs
10 Brown Road
Ithaca NY 14850

Schedule Year 2024 through 2025
Date Requested 10/10/2023
PRC# 2023012134

Location 1086 East Main Street
Project ID# 276721-23001
Project Type Reconstruction to Multiple School Buildings - Phase 1

Notice of Contract Award

New York State Labor Law, Article 8, Section 220.3a requires that certain information regarding the awarding of public work contracts, be furnished to the Commissioner of Labor. One "Notice of Contract Award" (PW 16, which may be photocopied), **MUST** be completed for **EACH** prime contractor on the above referenced project.

Upon notifying the successful bidder(s) of this contract, enter the required information and mail **OR** fax this form to the office shown at the bottom of this notice, **OR** fill out the electronic version via the NYSDOL website.

Contractor Information

All information must be supplied

Federal Employer Identification Number: _____		
Name: _____		
Address: _____ _____		
City: _____	State: _____	Zip: _____
Amount of Contract: \$ _____	Contract Type:	
Approximate Starting Date: ____/____/____	☐ (01) General Construction	
Approximate Completion Date: ____/____/____	☐ (02) Heating/Ventilation	
	☐ (03) Electrical	
	☐ (04) Plumbing	
	☐ (05) Other : _____	

Phone: (518) 457-5589 Fax: (518) 485-1870
W. Averell Harriman State Office Campus, Bldg. 12, Room 130, Albany, NY 12226

Social Security Numbers on Certified Payrolls:

The Department of Labor is cognizant of the concerns of the potential for misuse or inadvertent disclosure of social security numbers. Identity theft is a growing problem and we are sympathetic to contractors' concern regarding inclusion of this information on payrolls if another identifier will suffice.

For these reasons, the substitution of the use of the last four digits of the social security number on certified payrolls submitted to contracting agencies on public work projects is now acceptable to the Department of Labor. This change does not affect the Department's ability to request and receive the entire social security number from employers during its public work/ prevailing wage investigations.

Construction Industry Fair Play Act: Required Posting for Labor Law Article 25-B § 861-d

Construction industry employers must post the "Construction Industry Fair Play Act" notice in a prominent and accessible place on the job site. Failure to post the notice can result in penalties of up to \$1,500 for a first offense and up to \$5,000 for a second offense. The posting is included as part of this wage schedule. Additional copies may be obtained from the NYS DOL website, <https://dol.ny.gov/public-work-and-prevailing-wage>

If you have any questions concerning the Fair Play Act, please call the State Labor Department toll-free at 1-866-435-1499 or email us at: dol.misclassified@labor.ny.gov .

Worker Notification: (Labor Law §220, paragraph a of subdivision 3-a)

Effective June 23, 2020

This provision is an addition to the existing wage rate law, Labor Law §220, paragraph a of subdivision 3-a. It requires contractors and subcontractors to provide written notice to all laborers, workers or mechanics of the *prevailing wage and supplement rate* for their particular job classification *on each pay stub**. It also requires contractors and subcontractors to *post a notice* at the beginning of the performance of every public work contract *on each job site* that includes the telephone number and address for the Department of Labor and a statement informing laborers, workers or mechanics of their right to contact the Department of Labor if he/she is not receiving the proper prevailing rate of wages and/or supplements for his/her job classification. The required notification will be provided with each wage schedule, may be downloaded from our website www.labor.ny.gov or be made available upon request by contacting the Bureau of Public Work at 518-457-5589. *In the event the required information will not fit on the pay stub, an accompanying sheet or attachment of the information will suffice.

**To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND**

Budget Policy & Reporting Manual

B-610

Public Work Enforcement Fund

effective date December 7, 2005

1. Purpose and Scope:

This Item describes the Public Work Enforcement Fund (the Fund, PWEF) and its relevance to State agencies and public benefit corporations engaged in construction or reconstruction contracts, maintenance and repair, and announces the recently-enacted increase to the percentage of the dollar value of such contracts that must be deposited into the Fund. This item also describes the roles of the following entities with respect to the Fund:

- New York State Department of Labor (DOL),
- The Office of the State of Comptroller (OSC), and
- State agencies and public benefit corporations.

2. Background and Statutory References:

DOL uses the Fund to enforce the State's Labor Law as it relates to contracts for construction or reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law. State agencies and public benefit corporations participating in such contracts are required to make payments to the Fund.

Chapter 511 of the Laws of 1995 (as amended by Chapter 513 of the Laws of 1997, Chapter 655 of the Laws of 1999, Chapter 376 of the Laws of 2003 and Chapter 407 of the Laws of 2005) established the Fund.

3. Procedures and Agency Responsibilities:

The Fund is supported by transfers and deposits based on the value of contracts for construction and reconstruction, maintenance and repair, as defined in subdivision two of Section 220 of the Labor Law, into which all State agencies and public benefit corporations enter.

Chapter 407 of the Laws of 2005 increased the amount required to be provided to this fund to .10 of one-percent of the total cost of each such contract, to be calculated at the time agencies or public benefit corporations enter into a new contract or if a contract is amended. The provisions of this bill became effective August 2, 2005.

To all State Departments, Agency Heads and Public Benefit Corporations
IMPORTANT NOTICE REGARDING PUBLIC WORK ENFORCEMENT FUND

OSC will report to DOL on all construction-related ("D") contracts approved during the month, including contract amendments, and then DOL will bill agencies the appropriate assessment monthly. An agency may then make a determination if any of the billed contracts are exempt and so note on the bill submitted back to DOL. For any instance where an agency is unsure if a contract is or is not exempt, they can call the Bureau of Public Work at the number noted below for a determination. Payment by check or journal voucher is due to DOL within thirty days from the date of the billing. DOL will verify the amounts and forward them to OSC for processing.

For those contracts which are not approved or administered by the Comptroller, monthly reports and payments for deposit into the Public Work Enforcement Fund must be provided to the Administrative Finance Bureau at the DOL within 30 days of the end of each month or on a payment schedule mutually agreed upon with DOL.

Reports should contain the following information:

- Name and billing address of State agency or public benefit corporation;
- State agency or public benefit corporation contact and phone number;
- Name and address of contractor receiving the award;
- Contract number and effective dates;
- Contract amount and PWEF assessment charge (if contract amount has been amended, reflect increase or decrease to original contract and the adjustment in the PWEF charge); and
- Brief description of the work to be performed under each contract.

Checks and Journal Vouchers, payable to the "New York State Department of Labor" should be sent to:

Department of Labor
Administrative Finance Bureau-PWEF Unit
Building 12, Room 464
State Office Campus
Albany, NY 12226

Any questions regarding billing should be directed to NYSDOL's Administrative Finance Bureau-PWEF Unit at (518) 457-3624 and any questions regarding Public Work Contracts should be directed to the Bureau of Public Work at (518) 457-5589.



Required Notice under Article 25-B of the Labor Law

Attention All Employees, Contractors and Subcontractors: You are Covered by the Construction Industry Fair Play Act

The law says that you are an employee unless:

- You are free from direction and control in performing your job, **and**
- You perform work that is not part of the usual work done by the business that hired you, **and**
- You have an independently established business.

Your employer cannot consider you to be an independent contractor unless all three of these facts apply to your work.

It is against the law for an employer to misclassify employees as independent contractors or pay employees off the books.

Employee Rights: If you are an employee, you are entitled to state and federal worker protections. These include:

- Unemployment Insurance benefits, if you are unemployed through no fault of your own, able to work, and otherwise qualified,
- Workers' compensation benefits for on-the-job injuries,
- Payment for wages earned, minimum wage, and overtime (under certain conditions),
- Prevailing wages on public work projects,
- The provisions of the National Labor Relations Act, and
- A safe work environment.

It is a violation of this law for employers to retaliate against anyone who asserts their rights under the law. Retaliation subjects an employer to civil penalties, a private lawsuit or both.

Independent Contractors: If you are an independent contractor, **you must pay all taxes and Unemployment Insurance contributions required by New York State and Federal Law.**

Penalties for paying workers off the books or improperly treating employees as independent contractors:

- **Civil Penalty**
 - First offense: Up to \$2,500 per employee
 - Subsequent offense(s): Up to \$5,000 per employee
- **Criminal Penalty**
 - First offense: Misdemeanor - up to 30 days in jail, up to a \$25,000 fine and debarment from performing public work for up to one year.
 - Subsequent offense(s): Misdemeanor - up to 60 days in jail or up to a \$50,000 fine and debarment from performing public work for up to 5 years.

If you have questions about your employment status or believe that your employer may have violated your rights and you want to file a complaint, call the Department of Labor at (866) 435-1499 or send an email to dol.misclassified@labor.ny.gov. All complaints of fraud and violations are taken seriously. You can remain anonymous.

Employer Name:

IA 999 (09/16)



Attention Employees

THIS IS A: **PUBLIC WORK PROJECT**

If you are employed on this project as a **worker, laborer, or mechanic** you are entitled to receive the **prevailing wage and supplements rate** for the classification at which you are working.

Your pay stub and wage notice received upon hire must clearly state your wage rate and supplement rate.

Chapter 629 of
the Labor Laws
of 2007:

These wages are set by law and must be posted at the work site. They can also be found at:
<https://dol.ny.gov/bureau-public-work>



If you feel that you have not received proper wages or benefits, please call our nearest office.*

Albany	(518) 457-2744	Patchogue	(631) 687-4882
Binghamton	(607) 721-8005	Rochester	(585) 258-4505
Buffalo	(716) 847-7159	Syracuse	(315) 428-4056
Garden City	(516) 228-3915	Utica	(315) 793-2314
New York City	(212) 932-2419	White Plains	(914) 997-9507
Newburgh	(845) 568-5287		

* For New York City government agency construction projects, please contact the Office of the NYC Comptroller at (212) 669-4443, or www.comptroller.nyc.gov – click on Bureau of Labor Law.

Contractor Name: _____

Project Location: _____

Requirements for OSHA 10 Compliance

Article 8 §220-h requires that when the advertised specifications, for every contract for public work, is \$250,000.00 or more the contract must contain a provision requiring that every worker employed in the performance of a public work contract shall be certified as having completed an OSHA 10 safety training course. The clear intent of this provision is to require that all employees of public work contractors, required to be paid prevailing rates, receive such training "prior to the performing any work on the project."

The Bureau will enforce the statute as follows:

All contractors and sub contractors must attach a copy of proof of completion of the OSHA 10 course to the first certified payroll submitted to the contracting agency and on each succeeding payroll where any new or additional employee is first listed.

Proof of completion may include but is not limited to:

- Copies of bona fide course completion card (*Note: Completion cards do not have an expiration date.*)
- Training roster, attendance record or other documentation from the certified trainer pending the issuance of the card.
- Other valid proof

**A certification by the employer attesting that all employees have completed such a course is not sufficient proof that the course has been completed.

Any questions regarding this statute may be directed to the New York State Department of Labor, Bureau of Public Work at 518-457-5589.

WICKS

Public work projects are subject to the Wicks Law requiring separate specifications and bidding for the plumbing, heating and electrical work, when the total project's threshold is \$3 million in Bronx, Kings, New York, Queens and, Richmond counties; \$1.5 million in Nassau, Suffolk and Westchester counties; and \$500,000 in all other counties.

For projects below the monetary threshold, bidders must submit a sealed list naming each subcontractor for the plumbing, HVAC and electrical and the amount to be paid to each. The list may not be changed unless the public owner finds a legitimate construction need, including a change in specifications or costs or the use of a Project Labor Agreement (PLA), and must be open to public inspection.

Allows the state and local agencies and authorities to waive the Wicks Law and use a PLA if it will provide the best work at the lowest possible price. If a PLA is used, all contractors shall participate in apprentice training programs in the trades of work it employs that have been approved by the Department of Labor (DOL) for not less than three years. They shall also have at least one graduate in the last three years and use affirmative efforts to retain minority apprentices. PLA's would be exempt from Wicks, but deemed to be public work subject to prevailing wage enforcement.

The Commissioner of Labor shall have the power to enforce separate specification requirements on projects, and may issue stop-bid orders against public owners for non-compliance.

Other new monetary thresholds, and similar sealed bidding for non-Wicks projects, would apply to certain public authorities including municipal housing authorities, NYC Construction Fund, Yonkers Educational Construction Fund, NYC Municipal Water Finance Authority, Buffalo Municipal Water Finance Authority, Westchester County Health Care Association, Nassau County Health Care Corp., Clifton-Fine Health Care Corp., Erie County Medical Center Corp., NYC Solid Waste Management Facilities, and the Dormitory Authority.

Contractors must pay subcontractors within a 7 days period.

(07.19)

Introduction to the Prevailing Rate Schedule

Information About Prevailing Rate Schedule

This information is provided to assist you in the interpretation of particular requirements for each classification of worker contained in the attached Schedule of Prevailing Rates.

Classification

It is the duty of the Commissioner of Labor to make the proper classification of workers taking into account whether the work is heavy and highway, building, sewer and water, tunnel work, or residential, and to make a determination of wages and supplements to be paid or provided. It is the responsibility of the public work contractor to use the proper rate. If there is a question on the proper classification to be used, please call the district office located nearest the project. District office locations and phone numbers are listed below.

Prevailing Wage Schedules are issued separately for "General Construction Projects" and "Residential Construction Projects" on a county-by-county basis.

General Construction Rates apply to projects such as: Buildings, Heavy & Highway, and Tunnel and Water & Sewer rates.

Residential Construction Rates generally apply to construction, reconstruction, repair, alteration, or demolition of one family, two family, row housing, or rental type units intended for residential use.

Some rates listed in the Residential Construction Rate Schedule have a very limited applicability listed along with the rate. Rates for occupations or locations not shown on the residential schedule must be obtained from the General Construction Rate Schedule. Please contact the local Bureau of Public Work office before using Residential Rate Schedules, to ensure that the project meets the required criteria.

Payrolls and Payroll Records

Contractors and subcontractors are required to establish, maintain, and preserve for not less than six (6) years, contemporaneous, true, and accurate payroll records.

Every contractor and subcontractor shall submit to the Department of Jurisdiction (Contracting Agency), within thirty (30) days after issuance of its first payroll and every thirty (30) days thereafter, a transcript of the original payrolls, subscribed and affirmed as true under penalty of perjury.

Paid Holidays

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

Overtime

At a minimum, all work performed on a public work project in excess of eight hours in any one day or more than five days in any workweek is overtime. However, the specific overtime requirements for each trade or occupation on a public work project may differ. Specific overtime requirements for each trade or occupation are contained in the prevailing rate schedules.

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays.

The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Supplemental Benefits

Particular attention should be given to the supplemental benefit requirements. Although in most cases the payment or provision of supplements is straight time for all hours worked, some classifications require the payment or provision of supplements, or a portion of the supplements, to be paid or provided at a premium rate for premium hours worked. Supplements may also be required to be paid or provided on paid holidays, regardless of whether the day is worked. The Overtime Codes and Notes listed on the particular wage classification will indicate these conditions as required.

Effective Dates

When you review the schedule for a particular occupation, your attention should be directed to the dates above the column of rates. These are the dates for which a given set of rates is effective. The rate listed is valid until the next effective rate change or until the new annual determination which takes effect on July 1 of each year. All contractors and subcontractors are required to pay the current prevailing rates of wages and supplements. If you have any questions please contact the Bureau of Public Work or visit the New York State Department of Labor website (www.labor.ny.gov) for current wage rate information.

Apprentice Training Ratios

The following are the allowable ratios of registered Apprentices to Journey-workers.

For example, the ratio 1:1,1:3 indicates the allowable initial ratio is one Apprentice to one Journeyworker. The Journeyworker must be in place on the project before an Apprentice is allowed. Then three additional Journeyworkers are needed before a second Apprentice is allowed. The last ratio repeats indefinitely. Therefore, three more Journeyworkers must be present before a third Apprentice can be hired, and so on.

Please call Apprentice Training Central Office at (518) 457-6820 if you have any questions.

Title (Trade)	Ratio
Boilermaker (Construction)	1:1,1:4
Boilermaker (Shop)	1:1,1:3
Carpenter (Bldg.,H&H, Pile Driver/Dockbuilder)	1:1,1:4
Carpenter (Residential)	1:1,1:3
Electrical (Outside) Lineman	1:1,1:2
Electrician (Inside)	1:1,1:3
Elevator/Escalator Construction & Modernizer	1:1,1:2
Glazier	1:1,1:3
Insulation & Asbestos Worker	1:1,1:3
Iron Worker	1:1,1:4
Laborer	1:1,1:3
Mason	1:1,1:4
Millwright	1:1,1:4
Op Engineer	1:1,1:5
Painter	1:1,1:3
Plumber & Steamfitter	1:1,1:3
Roofer	1:1,1:2
Sheet Metal Worker	1:1,1:3
Sprinkler Fitter	1:1,1:2

If you have any questions concerning the attached schedule or would like additional information, please contact the nearest BUREAU of PUBLIC WORK District Office or write to:

New York State Department of Labor
Bureau of Public Work
State Office Campus, Bldg. 12
Albany, NY 12226

District Office Locations:	Telephone #	FAX #
Bureau of Public Work - Albany	518-457-2744	518-485-0240
Bureau of Public Work - Binghamton	607-721-8005	607-721-8004
Bureau of Public Work - Buffalo	716-847-7159	716-847-7650
Bureau of Public Work - Garden City	516-228-3915	516-794-3518
Bureau of Public Work - Newburgh	845-568-5287	845-568-5332
Bureau of Public Work - New York City	212-932-2419	212-775-3579
Bureau of Public Work - Patchogue	631-687-4882	631-687-4902
Bureau of Public Work - Rochester	585-258-4505	585-258-4708
Bureau of Public Work - Syracuse	315-428-4056	315-428-4671
Bureau of Public Work - Utica	315-793-2314	315-793-2514
Bureau of Public Work - White Plains	914-997-9507	914-997-9523
Bureau of Public Work - Central Office	518-457-5589	518-485-1870

Westchester County General Construction

Boilermaker	09/01/2024

JOB DESCRIPTION Boilermaker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2024 01/01/2025

Boilermaker \$ 67.38 \$ 68.88

Repairs & Renovations 67.38 68.88

Repairs & Renovation: Includes Repairing, Renovating replacement of parts to an existing unit(s).

SUPPLEMENTAL BENEFITS

Per Hour:

Boilermaker	33.5% of hourly	33.5% of Hourly
Repair & Renovations	Wage Paid	Wage Paid
	+ \$ 26.85	+ \$26.85

NOTE: "Hourly Wage Paid" shall include any and all premium(s) pay.

Repairs & Renovation Includes replacement of parts and repairs & renovation of existing unit.

OVERTIME PAY

See (*B, O, **U) on OVERTIME PAGE

Note:* Includes 9th & 10th hours, double for 11th or more.

** Labor Day ONLY, if worked.

Repairs & Renovation see (B,E,Q) on OT Page

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 12, 15, 25, 26, 29) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

(1/2) Year Terms at the following percentage of Boilermaker's Wage

1st	2nd	3rd	4th	5th	6th	7th
65%	70%	75%	80%	85%	90%	95%

Supplemental Benefits Per Hour:

	33.5% of Hourly Wage Paid Plus Amount Below	33.5% of Hourly Wage Paid Plus Amount Below
1st Term	\$ 20.36	\$ 20.36
2nd Term	21.28	21.28
3rd Term	22.22	22.22
4th Term	23.12	23.12
5th Term	24.07	24.07
6th Term	25.00	25.00
7th Term	25.93	25.93

NOTE: "Hourly Wage Paid" shall include any and all premium(s)

4-5

Carpenter	09/01/2024

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2024

Piledriver \$ 60.59
+ 10.00*

Dockbuilder \$ 60.59
+ 10.00*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 45.79

OVERTIME PAY

See (B, E2, O) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour

(1)year terms:

1st	2nd	3rd	4th
\$26.98	\$32.58	\$40.96	\$49.35
+ 5.50*	+ 5.50*	+ 5.50*	+ 5.50*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:

All Terms: \$ 32.34

8-1556 Db

Carpenter

09/01/2024

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2024

Carpet/Resilient

Floor Coverer \$ 55.05
+ 8.25*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

INCLUDES HANDLING & INSTALLATION OF ARTIFICIAL TURF AND SIMILAR TURF INDOORS/OUTDOORS.

SUPPLEMENTAL BENEFITS

Per hour:

\$ 39.45

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE.

Paid for 1st & 2nd yr.

Apprentices See (5,6,11,13,16,18,19,25)

Overtime: See (5,6,11,13,16,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wage per hour - (1) year terms:

1st	2nd	3rd	4th
\$ 25.20	\$ 28.20	\$ 32.45	\$ 40.33

+ 1.85* + 2.35* + 2.85* + 3.85*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:

1st	2nd	3rd	4th
\$ 15.22	\$ 16.22	\$ 19.32	\$ 20.32

8-2287

Carpenter**09/01/2024**

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour: 07/01/2024

Marine Construction:

Marine Diver \$ 75.46
+ 10.00*

Marine Tender \$ 55.00
+ 10.00*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 45.65

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 13, 16, 18, 19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms.

1st year	\$ 26.98 + 5.50*
2nd year	32.58 + 5.50*
3rd year	40.96 + 5.50*
4th year	49.35 + 5.50*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental Benefits

Per Hour:

All terms \$ 32.20

8-1456MC

Carpenter**09/01/2024**

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per hour: 07/01/2024

Building
Millwright \$ 59.35
+ 13.12*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS

Per hour:

Millwright \$ 45.41

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (18, 19) on HOLIDAY PAGE

Paid: See (18,19) on HOLIDAY PAGE.

Overtime See (5,6,8,11,13,18,19,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
\$ 32.16	\$ 37.61	\$ 43.06	\$ 53.96
+ 7.08*	+ 8.25*	+ 9.42*	+ 11.76*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:

One (1) year terms:

1st.	2nd.	3rd.	4th.
\$ 30.56	\$ 33.09	\$ 36.27	\$ 40.69

8-740.1

Carpenter

09/01/2024

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:

07/01/2024

Timberman \$ 55.59
+ 10.26*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2024

\$ 44.96

OVERTIME PAY

See (B, E, E2, Q) on OVERTIME PAGE

HOLIDAY

Overtime: See (5, 6, 11, 13, 25) on HOLIDAY PAGE

Paid: See (1) on HOLIDAY PAGE.

Paid: for 1st & 2nd yr.

Apprentices See (5,6,11,13,25)

Overtime: See (5,6,11,13,25) on HOLIDAY PAGE.

REGISTERED APPRENTICES

Wages per hour:

One (1) year terms:

1st	2nd	3rd	4th

\$24.96	\$30.07	\$37.72	\$45.38
+ 5.55*	+ 5.55*	+ 5.55*	+ 5.55*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental benefits per hour:

All terms \$ 31.95

8-1556 Tm

Carpenter

09/01/2024

JOB DESCRIPTION Carpenter

DISTRICT 8

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Westchester

PARTIAL COUNTIES

Orange: South of but including the following, Waterloo Mills, Slate Hill, New Hampton, Goshen, Blooming Grove, Mountainville, east to the Hudson River.

Putnam: South of but including the following, Cold Spring, TompkinsCorner, Mahopac, Croton Falls, east to Connecticut border.

Suffolk: West of Port Jefferson and Patchogue Road to Route 112 to the Atlantic Ocean.

WAGES

Per hour: 07/01/2024

Core Drilling:

Driller \$ 46.25
+ 3.25*

Driller Helper \$ 36.28
+ 3.25*

Note: Hazardous Waste Pay Differential:

For Level C, an additional 15% above wage rate per hour

For Level B, an additional 15% above wage rate per hour

For Level A, an additional 15% above wage rate per hour

Note: When required to work on water: an additional \$ 3.00 per hour.

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS

Per hour:

Driller and Helper \$ 30.24

OVERTIME PAY

See (B, G, P) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

8-1536-CoreDriller

Carpenter - Building / Heavy&Highway

09/01/2024

JOB DESCRIPTION Carpenter - Building / Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

WAGES

WAGES:(per hour)

Applies to CAPRENTER BUILDING/HEAVY & HIGHWAY/TUNNEL:

	07/01/2024	07/01/2025	07/01/2026
		Additional	Additional
Base Wage	\$ 42.76	\$ 1.25**	\$ 1.25**
	+\$6.62*		

*For all hours paid straight or premium.

**To be allocated at a later date.

SHIFT WORK

SHIFT DIFFERENTIAL: When it is mandated by a Government Agency irregular or off shift can be worked. The Carpenter shall receive an additional fifteen percent (15%) of wage plus applicable benefits.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 31.60

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

BUILDING:

Paid: See (1) on HOLIDAY PAGE.

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE.

- Holidays that fall on Sunday will be observed Monday.

HEAVY&HIGHWAY/TUNNEL:

Paid: See (5, 6, 25) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

- Holidays that fall on Sunday will be observed Monday

- Must be employed during the five (5) work days immediately preceding a holiday or during the five (5) work days following the paid holiday to receive holiday pay

- If Employee is entitled to a paid holiday, the Employee is paid the Holiday wage and supplemental benefits whether they work or not. If Employee works the Holiday, the Employee will receive holiday pay (including supplemental benefits), plus the applicable premium wage for working the Holiday. If Employee works in excess of 8 hours on Holiday, then benefits will be paid for any hours in excess of 8 hours.

REGISTERED APPRENTICES

1 year terms at the following wage rates:

1st	2nd	3rd	4th
\$ 21.38	\$ 25.66	\$ 29.93	\$ 34.21
+3.84*	+3.84*	+3.84*	+3.84*

*For all hours paid straight or premium

SUPPLEMENTAL BENEFITS per hour:

All terms \$ 16.25

11-279.1B/HH

Electrician

09/01/2024

JOB DESCRIPTION Electrician

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, New York, Queens, Richmond, Westchester

WAGES

Per hour: 07/01/2024

Service Technician \$ 37.40

Service and Maintenance on Alarm and Security Systems.

Maintenance, repair and /or replacement of defective (or damaged) equipment on, but not limited to, Burglar - Fire - Security - CCTV - Card Access - Life Safety Systems and associated devices. (Whether by service contract of T&M by customer request.)

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker: \$ 21.85

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 17, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 17, 25, 26) on HOLIDAY PAGE

9-3H

Electrician

09/01/2024

JOB DESCRIPTION Electrician

DISTRICT 8

ENTIRE COUNTIES

Westchester

WAGES

Per hour:	07/01/2024	04/17/2025
*Electrician/A-Technician	\$ 56.75	\$ 58.75
Teledata	56.75	58.75

*All new installations of wiring, conduit, junction boxes and light fixtures for projects with a base bid of more than \$325,000. For projects with a base bid of \$325,000 or less, see Maintenance and Repair rates.

Note: On a job where employees are required to work on bridges over navigable waters, transmission towers, light poles, bosun chairs, swinging scaffolds, etc. 40 feet or more above the water or ground or under compressed air, or tunnel projects under construction or where assisted breathing apparatus is required, they will be paid at the rate of time and one-half for such work except on normal pole line or building construction work.

SUPPLEMENTAL BENEFITS

Per hour:		
Journeyworker	\$ 59.39	\$61.09

OVERTIME PAY

See (A, G, *J, P) on OVERTIME PAGE

*NOTE: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wage rates:

	07/01/2024	04/17/2025
1st term	\$ 16.00	\$16.00
2nd term	17.00	17.00
3rd term	19.00	19.00
4th term	21.00	21.00
MIJ 1-12 months	26.50	26.50
MIJ 13-18 months	30.00	30.00

Supplemental Benefits per hour:

	07/01/2024	04/17/2025
1st term	\$ 12.40	\$ 12.72
2nd term	15.07	15.89
3rd term	16.40	17.23
4th term	17.73	18.57
MIJ 1-12 months	15.72	15.89
MIJ 13-18 months	16.17	16.29

8-3/W

Electrician

09/01/2024

JOB DESCRIPTION Electrician

DISTRICT 8

ENTIRE COUNTIES

Westchester

WAGES

Per hour	07/01/2024	04/17/2025
Electrician -M	\$ 30.00	\$ 30.00
H - Telephone	30.00	30.00

All work with a base bid amount of \$325,000 or less. Including repairs and /or replacement of defective electrical and teledata equipment, all work necessary to retrofit, service, maintain and repair all kinds of lighting fixtures and local lighting controls, and washing and cleaning of foregoing fixtures.

*If the project exceeds \$375,000 due to changes in the scope of work, an Electrician/A Technician must be part of the labor ratio.

SUPPLEMENTAL BENEFITS

	07/01/2024	04/17/2025
Electrician &		
H - Telephone	\$ 16.17	\$ 16.29

OVERTIME PAY

See (B, G, *J, P) on OVERTIME PAGE

*Note: Emergency work on Sunday and Holidays is at the time and one-half overtime rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

8-3m

Elevator Constructor

09/01/2024

JOB DESCRIPTION Elevator Constructor

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk

PARTIAL COUNTIES

Rockland: Entire County except for the Township of Stony Point

Westchester: Entire County except for the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per hour:

07/01/2024

03/17/2025

Elevator Constructor

\$ 80.35

\$ 83.37

Modernization &
Service/Repair

63.16

65.54

SUPPLEMENTAL BENEFITS

Per Hour:

Elevator Constructor

\$ 46.367

\$ 47.654

Modernization &
Service/Repairs

45.217

46.470

OVERTIME PAY

Constructor See (D, M, T) on OVERTIME PAGE.

Modern/Service See (B, F, S) on OVERTIME PAGE.

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

6 MONTH TERMS:

1st Term*
50%

2nd & 3rd Term*
50%

4th & 5th Term
55%

6th & 7th Term
65%

8th & 9th Term
75%

* Note: 1st, 2nd, 3rd Terms are based on Average wage of Constructor, Modernization & Service.
Terms 4 thru 9 Based on Journeyman's wage of classification Working in.

SUPPLEMENTAL BENEFITS:

07/01/2024

03/17/2025

Elevator Constructor

1st Term

\$ 0.00

\$ 0.00

2nd & 3rd Term

36.15

36.90

4th & 5th Term

37.19

37.99

6th & 7th Term

38.80

39.70

8th & 9th Term

40.41

41.40

Modernization &
Service/Repair

1st Term

\$ 0.00

\$ 0.00

2nd & 3rd Term

36.15

36.90

4th & 5th Term

37.19

37.99

6th & 7th Term

38.80

39.70

8th & 9th Term	40.41	41.40	4-1

Elevator Constructor	09/01/2024

JOB DESCRIPTION Elevator Constructor

DISTRICT 1

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Putnam, Sullivan, Ulster

PARTIAL COUNTIES

Delaware: Towns of Andes, Bovina, Colchester, Davenport, Delhi, Harpersfield, Hemdon, Kortright, Meredith, Middletown, Roxbury, Hancock & Stamford

Rockland: Only the Township of Stony Point.

Westchester: Only the Townships of Bedford, Lewisboro, Cortland, Mt. Kisco, North Salem, Pound Ridge, Somers and Yorktown.

WAGES

Per Hour	07/01/2024	01/01/2025
Mechanic	\$ 70.15	\$ 73.07
Helper	70% of Mechanic Wage Rate	70% of Mechanic Wage Rate

SUPPLEMENTAL BENEFITS

Per hour	07/01/2024	01/01/2025
Journeyworker/Helper	\$ 37.885*	\$ 38.435*

(*)Plus 6% of regular hourly if less than 5 years of service. Plus 8% of regular hourly rate if more than 5 years of service.

OVERTIME PAY

See (D, O) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 16) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16) on HOLIDAY PAGE

Note: When a paid holiday falls on Saturday, it shall be observed on Friday. When a paid holiday falls on Sunday, it shall be observed on Monday.

REGISTERED APPRENTICES

Wages per hour:

0-6 mo*	6-12 mo	2nd yr	3rd yr	4th yr
50 %	55 %	65 %	70 %	80 %

(*)Plus 6% of the hourly rate, no additional supplemental benefits.

Supplemental Benefits per hour worked:

Same as Journeyperson/Helper

1-138

Glazier	09/01/2024

JOB DESCRIPTION Glazier

DISTRICT 8

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per hour:	07/01/2024	05/01/2025
Glazier, Glass Tinting and Window Film	\$ 63.28	Additional \$ 1.11***
Scaffolding, including swing scaffold	67.28	
*Mechanical Equipment	64.28	
**Repair & Maintenance	30.76	

*Mechanical equipment, scissor jacks, man lifts, booms & buckets 30' or more, but not pipe scaffolding.

**Repair & Maintenance- All repair & maintenance work on a particular building whenever performed, where the total cumulative Repair & Maintenance contract value is under \$193,000.

***To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per hour: 7/01/2024

Glazier, Glass Tinting \$ 42.13

Window Film, Scaffolding
and Mechanical Equipment

Repair & Maintenance 24.62

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

For 'Repair & Maintenance' see (B, B2, I, S) on overtime page.

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

For 'Repair & Maintenance'

Paid: See(5, 6, 16, 25)

Overtime: See(5, 6, 16, 25)

REGISTERED APPRENTICES

Wage per hour:

(1) year terms at the following wage rates:

7/01/2024

1st term \$ 22.34

2nd term 30.64

3rd term 40.87

4th term 50.14

Supplemental Benefits:

(Per hour)

1st term \$ 19.27

2nd term 27.34

3rd term 32.85

4th term 36.01

8-1087 (DC9 NYC)

Insulator - Heat & Frost

09/01/2024

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour: 07/01/2024

Insulators

Heat & Frost \$ 71.01

SUPPLEMENTAL BENEFITS

Per Hour:

Insulators \$ 36.76

Heat & Frost

OVERTIME PAY

See (B, E, *Q, V) on OVERTIME PAGE

* Triple time for Labor Day (If worked)

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages:

1 year terms.

Wages Per Hour:

1st	2nd	3rd	4th
\$ 31.96	\$ 39.06	\$ 46.16	\$ 53.26

Supplemental Benefits:

\$ 16.56 \$ 20.23 \$ 23.91 \$ 27.06

4-12

Insulator - Heat & Frost

09/01/2024

JOB DESCRIPTION Insulator - Heat & Frost

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Westchester

WAGES

Per hour: 07/01/2024

Insulator \$ 60.85

Discomfort & Additional Training** 63.92

Fire Stop Work* 32.97

* Applies on all exclusive Fire Stop Work (When contract is for Fire Stop work only). No apprentices on these contracts only.

**Applies to work requiring: garb or equipment worn against the body not customarily worn by insulators; psychological evaluation ;special training, including but not limited to "Yellow Badge" radiation training

Note: Additional \$0.50 per hour for work 30 feet or more above floor or ground level.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 38.25

Discomfort & Additional Training 40.32

Fire Stop Work:
Journeyworker 19.48

OVERTIME PAY

See (B, E, E2, Q, *T) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Note: Last working day preceding Christmas and New Years day, workers shall work no later than 12:00 noon and shall receive 8 hrs pay.

Overtime: See (2*, 4, 6, 16, 25) on HOLIDAY PAGE.

*Note: Labor Day triple time if worked.

REGISTERED APPRENTICES

(1) year terms:

Insulator Apprentices:

1st	2nd	3rd	4th
\$ 32.97	\$ 38.54	\$ 44.12	\$ 49.70

Discomfort & Additional Training Apprentices:

1st	2nd	3rd	4th
\$ 34.51	\$ 40.38	\$ 46.27	\$ 52.16

Supplemental Benefits paid per hour:

Insulator Apprentices:

1st term	\$ 19.48
2nd term	23.23
3rd term	26.98
4th term	30.74

Discomfort & Additional Training Apprentices:

1st term	\$ 20.50
2nd term	24.47

3rd term	28.43	
4th term	32.39	
		8-91

Ironworker	09/01/2024

JOB DESCRIPTION Ironworker

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:	07/01/2024	01/01/2025 Additional
Stone Derrickmen Rigger	\$ 75.40	\$ 1.64*
Stone Handset Derrickman	72.55	1.11*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per hour:

Stone Derrickmen Rigger	\$ 45.52
Stone Handset Derrickman	44.76

OVERTIME PAY

See (B, D1, *E, Q, **V) on OVERTIME PAGE

*Time and one-half shall be paid for all work on Saturday up to eight (8) hours and double time shall be paid for all work thereafter.

** Benefits same premium as wages on Holidays only

HOLIDAY

Paid: See (18) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 25) on HOLIDAY PAGE
Work stops at schedule lunch break with full day's pay.

REGISTERED APPRENTICES

Wage per hour:

Stone Derrickmen Rigger:	1st	2nd	3rd	4th
07/01/2024	\$ 37.20	\$ 53.28	\$ 59.32	\$ 65.36

Supplemental Benefits:

Per hour:				
07/01/2024	23.27	34.39	34.39	34.39

Stone Handset:

1/2 year terms at the following hourly wage rate:

	1st	2nd	3rd	4th
07/01/2024	\$ 35.78	\$ 51.04	\$ 56.79	\$ 62.55

Supplemental Benefits:

Per hour:				
07/01/2024	22.95	34.08	34.08	34.08

9-197D/R

Ironworker	09/01/2024

JOB DESCRIPTION Ironworker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per Hour:	07/01/2024	01/01/2025
Ornamental Chain Link Fence	\$ 47.65 47.65	Additional \$ 1.25/hr*

Guide Rail 47.65

(*)To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker: \$ 66.29

OVERTIME PAY

See (B, B1, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

1 year terms

07/01/2024

1st Term \$ 25.98

2nd Term 28.45

3rd Term 30.80

4th Term 34.39

Supplemental Benefits per hour:

1st Term \$ 16.29

2nd Term 18.29

3rd Term 19.29

4th Term 20.29

4-580-Or

Ironworker

09/01/2024

JOB DESCRIPTION Ironworker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

PER HOUR:

07/01/2024

01/01/2025

Ironworker:

Structural \$ 57.20

Bridges

Machinery

Additional

\$ 1.75/Hr.*

(*)To be allocated at a later date.

SUPPLEMENTAL BENEFITS

PER HOUR PAID:

Journeyman \$ 89.85

OVERTIME PAY

See (B, B1, Q, *V) on OVERTIME PAGE

*NOTE: Benefits are calculated for every hour paid.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 18, 19) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES PER HOUR:

6 month terms at the following rate:

1st \$ 30.23

2nd 30.83

3rd - 6th 31.44

Supplemental Benefits

PER HOUR PAID: 62.47

4-40/361-Str

Ironworker

09/01/2024

JOB DESCRIPTION Ironworker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Rockland: Southern section - south of Convent Road and east of Blue Hills Road.

WAGES

Per hour: 07/01/2024

Reinforcing &
Metal Lathing \$ 56.95

"Base" Wage 55.20
plus \$ 1.75

"Base" Wage is used to calculate overtime hours only.

SUPPLEMENTAL BENEFITS

Per hour:
Reinforcing & Metal Lathing \$ 44.63

OVERTIME PAY

See (B, E, Q, *X) on OVERTIME PAGE

*Only \$23.50 per Hour for non worked hours

Supplemental Benefit Premiums for Overtime Hours worked:

Time & One Half \$ 51.13
Double Time 57.63

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 13, *18, **19, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wage rates:

Prior to 01/01/2020:

1st term	2nd term	3rd term	4th Term
Wage Per Hour:			
\$ 22.55	\$ 28.38	\$ 34.68	\$ 37.18
"Base" Wage			
\$21.00	\$26.80	\$33.10	\$35.60
plus \$1.55	plus \$1.58	plus \$1.58	plus \$1.58

"Base" Wage is used to calculate overtime hours ONLY.

SUPPLEMENTAL BENIFITS

Per Hour:

1st term	2nd term	3rd term	4th Term
\$18.17	\$21.34	\$22.00	\$22.50

After 01/01/2020:

1st term	2nd term	3rd term	4th Term
Wage Per Hour:			
\$ 22.55	\$ 23.60	\$ 24.60	\$ 25.65
"Base" Wage			
\$21.00	\$22.00	\$23.00	\$24.00
plus \$1.55	plus \$1.60	plus \$1.60	plus \$1.65

"Base" Wage is used to calculate overtime hours ONLY.

SUPPLEMENTAL BENIFITS

Per Hour:

1st term	2nd term	3rd term	4th Term
\$18.40	\$17.40	\$16.45	\$15.45

Laborer - Building	09/01/2024

JOB DESCRIPTION Laborer - Building

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

Per hour 07/01/2024

Laborer \$ 43.40
plus \$5.45**

Laborer/Asbestos & Hazardous
Materials Removal \$ 45.05*
plus \$5.45**

* Abatement/Removal of:

- Lead based or lead containing paint on materials to be repainted is classified as Painter.
- Asbestos containing roofs and roofing material is classified as Roofer.

** This portion is not subject to overtime premium.

NOTE: Upgrade/Material condition work plan for work performed during non-outage under a wage formula of 90% wage/100% fringe benefits at nuclear power plants.

SUPPLEMENTAL BENEFITS

Per hour: 07/01/2024

Journeyworker \$ 31.95

OVERTIME PAY

See (B, E, E2, Q, *V) on OVERTIME PAGE

*Note: For Sundays and Holidays worked benefits are at the same premium as wages.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

LABORER ONLY

Hourly terms at the following wage:

Level A	Level B	Level C	Level D
0-1000	1001-2000	2001-3000	3001-4000
\$ 28.08	\$ 31.90	\$ 35.72	\$ 39.54

Supplemental Benefits per hour:

Apprentices
All terms \$ 23.60

8-235/B

Laborer - Heavy&Highway	09/01/2024

JOB DESCRIPTION Laborer - Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

PUTNAM: APPLIES TO ALL HEAVY & HIGHWAY WORK EXCLUDING HIGHWAYS, STREETS, AND BRIDGES

GROUP I: Blaster, Quarry Master, Curbs/Asphalt Screedman, Pipe Jacking and Boring Operations Operator, Qualified Dead Condition Pipe Fuser (B Mechanic)

GROUP II: Burner, Drillers(jumbo, joy, wagon, air track, hydraulic), Drill Operator, Self Contained Rotary Drill, Curbs, Raker, Bar Person, Concrete Finisher.

GROUP III: Pavement Breakers, Jeep Operator, Jack Hammer, Pneumatic Tools (all), Gas Driller, Guniting, Railroad Spike Puller, Pipelayer, Chain Saw, Deck winches on scows, Power Buggy Operator, Power Wheelbarrow Operator, Bar Person Helper, Compressed Airline, Water Jet Lance.

GROUP IV: Concrete Laborers, Asph. Worker, Rock Scaler, Vibrator Oper., Bit Grinder, Air Tamper, Pumps, Epoxy (adhesives, fillers and troweled on), Barco Rammer, Concrete Grinder, Crack Router Operator, Guide Rail-digging holes and placing concrete and demolition when not to be replaced, distribution of materials and tightening of bolts.

GROUP V: Drillers Helpers, Common Laborer, Mason Tenders, Signal Person, Pit Person, Truck Spotter, Powder Person, Landscape/Nursery Person, Dump Person, Temp. Heat.

GROUP VIA: Asbestos/Toxic Waste Laborer-All removal (Roads, Tunnels, Landfills, etc.) Confined space laborer, Bio-remediation, Phyto-remediation, Lead or Hazardous material, Abatement Laborer.

Wages:(per hour) 07/01/2024

GROUP I	\$ 50.62*
GROUP II	49.27*
GROUP III	48.87*
GROUP IV	48.52*
GROUP V	48.17*
GROUP VIA	50.17*
Operator Qualified	
Gas Mechanic(A Mech)	60.62*
Flagperson	41.82*

*NOTE: To calculate overtime premiums, deduct \$0.10 from above wages

SHIFT WORK

A shift premium will be paid on Public Work contracts for off-shift or irregular shift work when mandated by the NYS D.O.T. or other Governmental Agency contracts. Employees shall receive an additional 15% per hour above current rate for all regular and irregular shift work. Premium pay shall be calculated using the 15% per hour differential as base rate.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:

First 40 Hours	
Per Hour	\$ 27.78
Over 40 Hours	
Per Hour	21.03

OVERTIME PAY

See (B, E, P, R, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

NOTE: For Holiday Overtime: 5, 6 - Code 'S' applies

For Holiday Overtime: 8, 15, 25, 26 - Code 'R' applies

REGISTERED APPRENTICES

	1st term	2nd term	3rd term	4th term
	1-1000hrs	1001-2000hrs	2001-3000hrs	3001-4000hrs
07/01/2024	\$ 28.07	\$ 33.12	\$ 37.94	\$ 42.76

Supplemental Benefits per hour:

1st term	\$ 3.85 - After 40 hours: \$ 3.50
2nd term	\$ 3.95 - After 40 hours: 3.50
3rd term	\$ 4.45 - After 40 hours: 3.90
4th term	\$ 5.00 - After 40 hours: 4.40

8-60H/H

Laborer - Tunnel

09/01/2024

JOB DESCRIPTION Laborer - Tunnel

DISTRICT 11

ENTIRE COUNTIES

Columbia, Dutchess, Greene, Orange, Otsego, Putnam, Rockland, Sullivan, Ulster, Westchester

PARTIAL COUNTIES

Chenango: Townships of Columbus, Sherburne and New Berlin.

Delaware: Townships of Andes, Bovina, Middletown, Roxbury, Franklin, Hamden, Stamford, Delhi, Kortright, Harpersfield, Merideth and Davenport.

WAGES

Class 1: All support laborers/sandhogs working above the shaft or tunnel.

Class 2: All laborers/sandhogs working in the shaft or tunnel.

Class 4: Safety Miners

Class 5: Site work related to Shaft/Tunnel

WAGES: (per hour)

	07/01/2024	06/01/2025
Class 1	\$ 57.05	\$ 58.55
Class 2	59.20	60.70
Class 4	65.60	67.10
Class 5	49.90	51.40

Toxic and hazardous waste, lead abatement and asbestos abatement work will be paid an additional \$ 3.00 an hour.

SHIFT WORK

SHIFT DIFFERENTIAL...On all Government mandated irregular shift work:

- Employee shall be paid at time and one half the regular rate Monday through Friday.
- Saturday shall be paid at 1.65 times the regular rate.
- Sunday shall be paid at 2.15 times the regular rate.

SUPPLEMENTAL BENEFITS

Per hour:

Benefit 1	\$ 36.98	\$ 38.23
Benefit 2	55.39	59.99
Benefit 3	74.58	76.73

Benefit 1 applies to straight time hours, paid holidays not worked.

Benefit 2 applies to over 8 hours in a day (M-F), irregular shift work hours worked, and Saturday hours worked.

Benefit 3 applies to Sunday and Holiday hours worked.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 15, 16, 25) on HOLIDAY PAGE

When a recognized Holidays falls on Saturday or Sunday, holidays falling on Saturday shall be recognized or observed on Friday and holidays falling on Sunday shall be recognized or observed on Monday. Employees ordered to work on the Saturday or Sunday of the holiday or on the recognized or the observed Friday or Monday for those holidays falling on Saturday or Sunday shall receive double time the established rate and benefits for the holiday.

REGISTERED APPRENTICES

FOR APPRENTICE RATES, refer to the appropriate Laborer Heavy & Highway wage rate contained in the wage schedule for the County and location where the work is to be performed.

11-17/60/235/754Tun

Lineman Electrician

09/01/2024

JOB DESCRIPTION Lineman Electrician

DISTRICT 6

ENTIRE COUNTIES

Westchester

WAGES

A Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors, assembly of all electrical materials, conduit, pipe or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

Crane Operators: Operation of any type of crane on line projects.

Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on line projects.

Digging Machine Operator: All other digging equipment and augering on line projects.

A Groundman/Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator equipment/operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

NOTE: Includes Teledata Work within ten (10) feet of High Voltage Transmission Lines. Also includes digging of holes for poles, anchors, footer, and foundations for electrical equipment.

Below rates apply to electrical overhead and underground distribution and maintenance work and overhead and underground transmission line work, electrical substations, switching structures, continuous pipe-type underground fluid or gas filled transmission conduit and cable installations, maintenance jobs or projects, railroad catenary installations and maintenance, third rail installations, the bonding of rails and the installation of fiber optic cable. Includes access matting for line work.

Per hour: 07/01/2024

Group A:

Lineman, Tech, Welder	\$ 61.91
Crane, Crawler Backhoe	61.91
Cable Splicer-Pipe Type	68.10
Cert. Welder-Pipe Type	65.01

Group B:

Digging Mach Operator	55.72
Tractor Trailer Driver	52.62
Groundman, Truck Driver	49.53
Equipment Mechanic	49.53
Flagman	37.15

Additional \$1.00 per hour for entire crew when a helicopter is used.

SHIFT WORK

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

SUPPLEMENTAL BENEFITS

Per hour worked (but also required on non-worked holidays):

07/01/2024

Group A	\$ 30.90
	*plus 7% of the hourly wage paid

Group B	\$ 26.90
	*plus 7% of the hourly wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. NOTE: Double time for emergency work designated by the Dept. of Jurisdiction.

WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.
Overtime	See (5, 6, 8, 13, 25) on HOLIDAY PAGE plus Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2024

\$ 26.90

*plus 7% of
the hourly
wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aWest

Lineman Electrician - Teledata

09/01/2024

JOB DESCRIPTION Lineman Electrician - Teledata

DISTRICT 6

ENTIRE COUNTIES

Albany, Allegany, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Lewis, Livingston, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour:

For outside work, stopping at first point of attachment (demarcation).

07/01/2024

01/01/2025

Cable Splicer	\$ 39.24	\$ 40.81
Installer, Repairman	\$ 37.24	\$ 38.73
Teledata Lineman	\$ 37.24	\$ 38.73
Tech., Equip. Operator	\$ 37.24	\$ 38.73
Groundman	\$ 19.74	\$ 20.53

NOTE: EXCLUDES Teledata work within ten (10) feet of High Voltage (600 volts and over) transmission lines. For this work please see LINEMAN.

SHIFT WORK

THE FOLLOWING RATES APPLY WHEN THE CONTRACTING AGENCY MANDATES MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION ARE WORKED. WHEN TWO (2) OR THREE (3) SHIFTS ARE WORKED THE FOLLOWING RATES APPLY:

1ST SHIFT	REGULAR RATE
2ND SHIFT	REGULAR RATE PLUS 10%
3RD SHIFT	REGULAR RATE PLUS 15%

SUPPLEMENTAL BENEFITS

Per hour:

07/01/2024

01/01/2025

Journeyworker	\$ 5.70	\$ 5.70
	*plus 3% of the hour wage paid	*plus 3% of the hour wage paid

*The 3% is based on the hourly wage paid, straight time rate or premium rate.

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 16) on HOLIDAY PAGE

6-1249LT - Teledata

Lineman Electrician - Traffic Signal, Lighting

09/01/2024

JOB DESCRIPTION Lineman Electrician - Traffic Signal, Lighting

DISTRICT 6

ENTIRE COUNTIES

Westchester

WAGES

Lineman/Technician shall perform all overhead aerial work. A Lineman/Technician on the ground will install all electrical panels, connect all grounds, install and connect all electrical conductors which includes, but is not limited to road loop wires; conduit and plastic or other type pipes that carry conductors, flex cables and connectors, and to oversee the encasement or burial of such conduits or pipes.

Crane Operators: Operation of any type of crane on Traffic Signal/Lighting projects.

Crawler Backhoe: Operation of tracked excavator/crawler backhoe with 1/2 yard bucket or larger on Traffic Signal/Lighting projects.

Digging Machine Operator: All other digging equipment and augering on Traffic Signal/Lighting projects.

A Groundman/Groundman Truck Driver shall: Build and set concrete forms, handle steel mesh, set footer cages, transport concrete in a wheelbarrow, hand or machine concrete vibrator, finish concrete footers, mix mortar, grout pole bases, cover and maintain footers while curing in cold weather, operate jack hammer, operate hand pavement breaker, tamper, concrete and other motorized saws, as a drill helper, operate and maintain generators, water pumps, chainsaws, sand blasting, operate mulching and seeding machine, air tools, electric tools, gas tools, load and unload materials, hand shovel and/or broom, prepare and pour mastic and other fillers, assist digger operator/equipment operator in ground excavation and restoration, landscape work and painting. Only when assisting a lineman technician, a groundman/truck driver may assist in installing conduit, pipe, cables and equipment.

A flagger's duties shall consist of traffic control only.

Per hour: 07/01/2024

Group A:

Lineman, Technician	\$ 55.95
Crane, Crawler Backhoe	55.95
Certified Welder	58.75

Group B:

Digging Machine	50.36
Tractor Trailer Driver	47.56
Groundman, Truck Driver	44.76
Equipment Mechanic	44.76
Flagman	33.57

Above rates are applicable for installation, testing, operation, maintenance and repair on all Traffic Control (Signal) and Illumination (Lighting) projects, Traffic Monitoring Systems, and Road Weather Information Systems. Includes digging of holes for poles, anchors, footer foundations for electrical equipment; assembly of all electrical materials or raceway; placing of fish wire; pulling of cables, wires or fiber optic cable through such raceways; splicing of conductors; dismantling of such structures, lines or equipment.

SHIFT WORK

THE FOLLOWING RATES WILL APPLY ON ALL CONTRACTING AGENCY MANDATED MULTIPLE SHIFTS OF AT LEAST FIVE (5) DAYS DURATION WORKED BETWEEN THE HOURS LISTED BELOW:

1ST SHIFT	8:00 AM TO 4:30 PM REGULAR RATE
2ND SHIFT	4:30 PM TO 1:00 AM REGULAR RATE PLUS 17.3%
3RD SHIFT	12:30 AM TO 9:00 AM REGULAR RATE PLUS 31.4%

SUPPLEMENTAL BENEFITS

Per hour worked:

07/01/2024

Group A

\$ 30.90
*plus 7% of
the hourly
wage paid

Group B

\$ 26.90
*plus 7% of
the hourly
wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

OVERTIME PAY

See (B, E, Q, X) on OVERTIME PAGE. *Note* Double time for emergency work designated by the Dept. of Jurisdiction.

WAGE CAP - Double the straight time hourly base wage shall be the maximum hourly wage compensation for any hour worked. Contractor is still responsible to pay the hourly benefit amount for each hour worked.

HOLIDAY

Paid: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.
Overtime: See (5, 6, 8, 13, 25) on HOLIDAY PAGE and Governor of NYS Election Day.

NOTE: All paid holidays falling on Saturday shall be observed on the preceding Friday. All paid holidays falling on Sunday shall be observed on the following Monday. Supplements for holidays paid at straight time.

REGISTERED APPRENTICES

WAGES per hour: 1000 hour terms at the following percentage of the applicable Journeyworker's Lineman wage.

1st	2nd	3rd	4th	5th	6th	7th
60%	65%	70%	75%	80%	85%	90%

SUPPLEMENTAL BENEFITS per hour:

07/01/2024

\$ 26.90
*plus 7% of
the hourly
wage paid

*The 7% is based on the hourly wage paid, straight time or premium time.

6-1249aWestLT

Mason - Building	09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2024	12/02/2024
Tile Setters	\$ 63.91	Additional \$ 0.71*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per Hour:	\$ 27.66* + \$8.50

* This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE
Work beyond 10 hours on Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage per hour:

(750 hour) term at the following wage rate:

Term:									
1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
1-750	751-1500	1501-2250	2251-3000	3001-3750	3751-4500	4501-5250	5251-6000	6001-6750	6501-7000
07/01/2024									
\$22.19	\$27.21	\$34.45	\$39.46	\$43.07	\$46.58	\$50.23	\$55.24	\$57.71	\$62.00

Supplemental Benefits per hour:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
07/01/2024									

\$12.55*	\$12.55*	\$15.36*	\$15.36*	\$16.36*	\$17.86*	\$18.86*	\$18.86*	\$18.86*	\$24.11*
+\$.76	+\$.81	+\$.91	+\$.96	+\$ 1.43	+\$ 1.48	+\$ 1.91	+\$ 1.97	+\$ 4.57	+\$ 5.18

* This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/52A

Mason - Building

09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour:

07/01/2024

Bricklayer	\$ 47.44
Cement Mason	47.44
Plasterer/Stone Mason	47.44
Pointer/Caulker	47.44

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK

SHIFT WORK: When shift work or an irregular workday is mandated or required by state, federal, county, local or other governmental agency contracts, the following premiums apply:

Irregular workday requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman	\$ 38.50

OVERTIME PAY

OVERTIME:

Cement Mason See (B, E, Q, W) on OVERTIME PAGE.

All Others See (B, E, Q) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5wp-b

Mason - Building

09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Building

	07/01/2024	01/01/2025
Wages per hour:		Additional
Mosaic & Terrazzo Mechanic	\$ 60.98	\$ 1.06*
Mosaic & Terrazzo Finisher	58.96	

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per hour:

Mosaic & Terrazzo Mechanic	\$ 31.36* + \$9.78
Mosaic & Terrazzo Finisher	\$ 31.36* + \$9.77

*This portion of benefits subject to same premium rate as shown for overtime wages.

OVERTIME PAY

See (A, E, Q) on OVERTIME PAGE

07/01/2024- Deduct \$7.00 from hourly wages before calculating overtime.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE
Easter Sunday is an observed holiday. Holidays falling on a Saturday will be observed on that Saturday. Holidays falling on a Sunday will be celebrated on the Monday.

REGISTERED APPRENTICES

Wages Per hour:

	1st 0- 1500	2nd 1501- 3000	3rd 3001- 3750	4th 3751- 4500	5th 4501- 5250	6th 5251- 6000
07/01/2024	\$ 25.19	\$ 32.39	\$ 38.18	\$ 40.78	\$ 49.00	\$ 55.75

Supplemental Benefits per hour:

07/01/2024	\$7.12* + 3.43	\$9.16* + 4.40	\$17.22* + 5.87	\$23.86* + 6.84	\$24.86* + 7.83	\$27.36* + 8.80

*This portion of benefits subject to same premium rate as shown for overtime wages.

9-7/3

Mason - Building

09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2024	01/06/2025
		Additional

Building-Marble Restoration:

Marble, Stone &	\$ 47.72	\$ 0.57*

Terrazzo Polisher

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:

Building-Marble Restoration:

Marble, Stone &

Polisher \$ 31.50

OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE

* On Saturdays, 8th hour and successive hours paid at double hourly rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

WAGES per hour:

900 hour term at the following wage:

1st	2nd	3rd	4th
1- 900	901- 1800	1801- 2700	2701
\$ 33.40	\$ 38.18	\$ 42.94	\$ 47.72

Supplemental Benefits Per Hour:

29.06	29.87	30.69	31.50

9-7/24-MP

Mason - Building

09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, Nassau, New York, Orange, Putnam, Queens, Richmond, Rockland, Suffolk, Sullivan, Ulster, Westchester

WAGES

Per Hour:

07/01/2024	01/06/2025 Additional \$ 0.75*
Marble Cutters & Setters	\$ 63.92

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker \$ 40.05

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage Per Hour:

07/01/2024

750 hour terms at the following wage

1st	2nd	3rd	4th	5th	6th	7th	8th
0- 3000	3001- 3750	3751- 4500	4501- 5250	5251- 6000	6001- 6750	6751- 7500	7500+
\$ 27.01	\$ 40.52	\$ 43.88	\$ 47.26	\$ 50.64	\$ 54.32	\$ 60.71	\$ 63.92

Supplemental Benefits per hour:

07/01/2024

1st	2nd	3rd	4th	5th	6th	7th	8th
\$ 26.42	\$ 29.76	\$ 30.61	\$ 31.44	\$ 32.28	\$ 37.55	\$ 39.23	\$ 40.05

Mason - Building	09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Nassau, Rockland, Suffolk, Westchester

WAGES

Per hour:	07/01/2024	12/02/2024
		Additional
Tile Finisher	\$ 49.08	\$ 0.59*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per Hour:

\$ 24.56*
+ 8.32

*This portion of benefits is subjected to same premium rate as shown for overtime wages

OVERTIME PAY

See (B, E, Q, *V) on OVERTIME PAGE

*Work beyond 10 hours on a Saturday shall be paid at double the hourly wage rate.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 11, 15, 16, 25) on HOLIDAY PAGE

9-7/88A-tf

Mason - Building	09/01/2024

JOB DESCRIPTION Mason - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2024	01/06/2025
Marble, Stone,		Additional
Maintenance Finishers:	\$ 27.72	\$ 0.41*

Note 1: An additional \$2.00 per hour
for time spent grinding floor using
"60 grit" and below.

Note 2: Flaming equipment operator
shall be paid an additional \$25.00 per day.

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Per Hour:

Marble, Stone
Maintenance Finishers: \$ 15.74

OVERTIME PAY

See (B, *E, Q, V) on OVERTIME PAGE

*Double hourly rate after 8 hours on Saturday

HOLIDAY

Paid: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 11, 15, 25) on HOLIDAY PAGE
1st term apprentice gets paid for all observed holidays.

REGISTERED APPRENTICES

WAGES per hour:

	07/01/2024
0-750	\$ 22.32
751-1500	23.04
1501-2250	23.75
2251-3000	24.48

3001-3750	25.56
3751-4500	27.00
4501+	27.72

Supplemental Benefits:
Per hour:

0-750	12.69
751-1500	13.10
1501-2250	13.51
2251-3000	13.91
3001-3750	14.52
3751-4500	15.33
4501+	15.74

9-7/24M-MF

Mason - Building / Heavy&Highway

09/01/2024

JOB DESCRIPTION Mason - Building / Heavy&Highway

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour: 07/01/2024 01/06/2025
Additional

Marble-Finisher \$ 49.99 \$ 0.53*

*To be allocated at a later date.

SUPPLEMENTAL BENEFITS

Journeyworker:
Per hour

Marble- Finisher \$ 37.39

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

Work beyond 8 hours on a Saturday shall be paid at double the rate.

HOLIDAY

Overtime: See (5, 6, 8, 11, 15, 16, 25) on HOLIDAY PAGE

When an observed holiday falls on a Sunday, it will be observed the next day.

9-7/20-MF

Mason - Heavy&Highway

09/01/2024

JOB DESCRIPTION Mason - Heavy&Highway

DISTRICT 11

ENTIRE COUNTIES

Putnam, Rockland, Westchester

PARTIAL COUNTIES

Orange: Only the Township of Tuxedo.

WAGES

Per hour: 07/01/2024

Bricklayer	\$ 47.94
Cement Mason	47.94
Marble/Stone Mason	47.94
Plasterer	47.94
Pointer/Caulker	47.94

Additional \$1.00 per hour for power saw work

Additional \$0.50 per hour for swing scaffold or staging work

SHIFT WORK

When shift work or an irregular workday is mandated or required by state, federal, county, local or other governmental contracts, the following rates apply:

Irregular workday requires 15% premium

Second shift an additional 15% of wage plus benefits to be paid

Third shift an additional 25% of wage plus benefits to be paid

SUPPLEMENTAL BENEFITS

Per hour:

Journeyman \$ 38.50

OVERTIME PAY

Cement Mason See (B, E, Q, W)

All Others See (B, E, Q,)

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

- Whenever any of the above holidays fall on Sunday, they will be observed on Monday. Whenever any of the above holidays fall on Saturday, they will be observed on Friday.

- Supplemental Benefits are not paid for paid Holiday

- If Holiday is worked, Supplemental Benefits are paid for hours worked.

- Whenever an Employee works within three (3) calendar days before a holiday, the Employee shall be paid for the Holiday.

REGISTERED APPRENTICES

Wages per hour:

750 hour terms at the following percentage of Journeyman's wage

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Supplemental Benefits per hour

750 hour terms at the following percentage of journeyman supplements

1st	2nd	3rd	4th	5th	6th	7th	8th
50%	55%	60%	65%	70%	75%	80%	85%

Apprentices indentured before June 1st, 2011 receive full journeyman benefits

11-5WP-H/H

Operating Engineer - Building

09/01/2024

JOB DESCRIPTION Operating Engineer - Building

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, New York, Putnam, Queens, Richmond, Westchester

PARTIAL COUNTIES

Dutchess: that part of Dutchess County lying south of the North City Line of the City of Poughkeepsie.

WAGES

NOTE: Construction surveying

Party Chief--One who directs a survey party

Instrument Man--One who runs the instrument and assists Party Chief.

Rodman--One who holds the rod and assists the Survey Crew

Wages:(Per Hour) 07/01/2024

Building Construction:

Party Chief	\$ 79.99
Instrument Man	60.36
Rodman	40.45

Steel Erection:

Party Chief	83.13
Instrument Man	64.21
Rodman	44.33

Heavy Construction-NYC counties only:
(Foundation, Excavation.)

Party Chief	88.06
Instrument man	65.66
Rodman	55.70

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2024
Building Construction	\$ 28.63* +\$ 7.65
Steel Erection	29.23* + 7.65
Heavy Construction	30.04* + 7.64

* This portion subject to SAME premium as wages

Non-Worked Holiday Supplemental Benefit:
21.83

OVERTIME PAY

See (A, B, E, Q) on OVERTIME PAGE

Code "A" applies to Building Construction and has double the rate after 7 hours on Saturdays.

Code "B" applies to Heavy Construction and Steel Erection and had double the rate after 8 hours on Saturdays.

HOLIDAY

Paid: See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE
Overtime: See (5, 6, 9, 11, 15, 16, 25) on HOLIDAY PAGE

9-15Db

Operating Engineer - Building

09/01/2024

JOB DESCRIPTION Operating Engineer - Building

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I:

Cranes (All Types up to 49 tons), Boom Trucks, Cherry Pickers (All Types), Clamshell Crane, Derrick (Stone and Steel), Dragline, Franki Pile Rig or similar, High Lift (Lull or similar) with crane attachment and winch used for hoisting or lifting, Hydraulic Cranes, Pile Drivers, Potain and similar.

Cranes (All types 50-99 tons), Drill Rig Casa Grande (CAT or similar), Franki Pile Rig or similar, Hydraulic Cranes (All types including Crawler Cranes- No specific boom length).

Cranes (All types 100 tons and over), All Tower Cranes, All Climbing Cranes irrespective of manufacturer and regardless of how the same is rigged, Franki Pile Rig or similar, Conventional Cranes (All types including Crawler Cranes-No specific boom length), Hydraulic Cranes.

GROUP I-A: Barber Green Loader-Euclid Loader, Bulldozer, Carrier-Trailer Horse, Concrete Cleaning Decontamination Machine Operator, Concrete-Portable Hoist, Conway or Similar Mucking Machines, Elevator & Cage, Excavators all types, Front End Loaders, Gradall, Shovel, Backhoe, etc.(Crawler or Truck), Heavy Equipment Robotics Operator/Mechanic, Hoist Engineer-Material, Hoist Portable Mobile Unit, Hoist(Single, Double or Triple Drum), Horizontal Directional Drill Locator, Horizontal Directional Drill Operator and Jersey Spreader, Letourneau or Tournapull(Scrapers over 20 yards Struck), Lift Slab Console, etc., Lull HiLift or Similar, Master Environmental Maintenance Mechanics, Mucking Machines Operator/Mechanic or Similar Type, Overhead Crane, Pavement Breaker(Air Ram), Paver(Concrete), Post Hole Digger, Power House Plant, Road Boring Machine, Road Mix Machine, Ross Carrier and Similar Machines, Rubber tire double end backhoes and similar machines, Scoopmobile Tractor-Shovel Over 1.5 yards, Shovel (Tunnels), Spreader (Asphalt) Telephie(Cableway), Tractor Type Demolition Equipment, Trenching Machines-Vermeer Concrete Saw Trencher and Similar, Ultra High Pressure Waterjet Cutting Tool System, Vacuum Blasting Machine operator/mechanic, Winch Truck A Frame.

GROUP I-B: Compressor (Steel Erection), Mechanic (Outside All Types), Negative Air Machine (Asbestos Removal), Push Button (Buzz Box) Elevator.

GROUP II: Compactor Self-Propelled, Concrete Pump, Crane Operator in Training (Over 100 Tons), Grader, Machines Pulling Sheep's Foot Roller, Roller (4 ton and over), Scrapers (20 yards Struck and Under), Vibratory Rollers, Welder.

GROUP III-A: Asphalt Plant, Concrete Mixing Plants, Forklift (All power sources), Joy Drill or similar, Tractor Drilling Machine, Loader (1 1/2 yards and under), Portable Asphalt Plant, Portable Batch Plant, Portable Crusher, Skid Steer (Bobcat or similar), Stone Crusher, Well Drilling Machine, Well Point System.

GROUP III-B: Compressor Over 125 cu. Feet, Conveyor Belt Machine regardless of size, Compressor Plant, Ladder Hoist, Stud Machine.

GROUP IV-A: Batch Plant, Concrete Breaker, Concrete Spreader, Curb Cutter Machine, Finishing Machine-Concrete, Fine Grading Machine, Hepa Vac Clean Air Machine, Material Hopper(sand, stone, cement), Mulching Grass Spreader, Pump Gypsum etc, Pump-Plaster-Grout-Fireproofing. Roller(Under 4 Ton),Spreading and Fine Grading Machine, Steel Cutting Machine, Siphon Pump, Tar Joint Machine, Television Cameras for Water, Sewer, Gas etc. Turbo Jet Burner or Similar Equipment, Vibrator (1 to 5).

GROUP IV-B: Compressor (all types), Heater (All Types), Fire Watchman, Lighting Unit (Portable & Generator) Pump, Pump Station(Water, Sewer, Portable, Temporary), Welding Machine (Steel Erection & Excavation).

GROUP V: Mechanics Helper, Motorized Roller (walk behind), Stock Attendant, Welder's Helper, Maintenance Engineer Crane(75 ton and over).

Group VI-A: Welder Certified

GROUP VI-B: Utility Man, Warehouse Man.

WAGES: (per hour)

07/01/2024

GROUP I

Cranes- up to 49 tons \$ 67.43

Cranes- 50 tons to 99 tons 69.77

Cranes- 100 tons and over 79.64

GROUP I-A 59.04

GROUP I-B 54.41

GROUP II 56.97

GROUP III-A 54.88

GROUP III-B 52.25

GROUP IV-A 54.33

GROUP IV-B 45.94

GROUP V 49.53

Group VI-A 57.96

GROUP VI-B

Utility Man 47.00

Warehouse Man 49.26

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects.

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour.

Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour.

Loader operators over 5 cubic yard capacity additional .50 per hour.

Shovel operators over 4 cubic yard capacity additional \$1.00 per hour.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 32.32

OVERTIME PAY

See (B, E, Q, V) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

8-137B

Operating Engineer - Heavy&Highway

09/01/2024

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane, (Crawler, Truck),
Dragline, Drill Rig (Casa Grande, Cat, or Similar), Floating Crane (Crane on Barges) under 100 tons, Gin Pole, Hoist Engineer-Concrete
(Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger (Truck or Truck Mounted), Boat Captain, Bulldozer-All Sizes, Central Mix Plant Operator, Chipper (all types), Close
Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader (Motor Grader), Elevator &
Cage (Materials or Passenger), Excavator (and all attachments), Front End Loaders (1 1/2 yards and over), High Lift Lull and similar, Hoist
(Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer (Material), Jack and Bore Machine, Log Skidders, Mill Machines,
Mucking Machines, Overhead Crane, Paver (concrete), Post Pounder (of any type), Push Cats, Road Reclaimer, Robot Hammer (Brokk or
similar), Robotic Equipment (Scope of Engineer Schedule), Ross Carrier and similar, Scrapers (20 yard struck and over), Side Boom, Slip
Form Machine, Spreader (Asphalt), Trenching Machines (Telephies-Vermeer Concrete Saw), Tractor Type Demolition Equipment, Vacuum
Truck. Vibratory Roller(Riding) or Roller used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver (Asphalt).

GROUP II-A: Ballast Regulators, Compactor Self Propelled, Fusion Machine, Rail Anchor Machines, Roller (4 ton and over), Scrapers (20
yard struck and under).

GROUP II-B: Mechanic (Outside) All Types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler (High Pressure), Concrete Breaker (Track or Rubber Tire), Concrete Pump,
Concrete Spreader, Excavator Drill, Farm Tractor, Forklift (all types), Gas Tapping (Live), Hydroseeder, Loader (1 1/2 yards and under),
Locomotive (all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher (Apprentice),
Powerhouse Plant, Roller (under 4 ton), Sheer Excavator, Skid Steer/Bobcat, Stone Crusher, Sweeper (with seat), Well Drilling Machine.

GROUP IV: Service Person (Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine (Truck Mounted), Heater (all types), Lighting Unit (Portable), Maintenance Engineer (For Crane Only),
Mechanics Helper, Pump (Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck (Sewer Jet or Similar),
Welders Helper, Welding Machine (Steel Erection), Well Point System.

GROUP V: All Tower Cranes-All Climbing Cranes and all cranes of 100-ton capacity or greater (3900 Manitowac or similar) irrespective of
manufacturer and regardless of how the same is rigged, Hoist Engineer (Steel), Engineer-Pile Driver, Jersey Spreader, Pavement
Breaker/Post Hole Digger.

WAGES: Per hour: 07/01/2024

Group I	\$ 68.63
Group I-A	60.42
Group I-B	63.70
Group II-A	57.84
Group II-B	59.67
Group III	56.81
Group IV	51.57
Group IV-B	44.19
Group V	
Engineer All Tower, Climbing and	
Cranes of 100 Tons	77.82
Hoist Engineer(Steel)	70.41
Engineer(Pile Driver)	75.13
Jersey Spreader, Pavement Breaker (Air	
Ram)Post Hole Digger	59.19

Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour over the rate listed
in the Wage Schedule. Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour over the
rate listed in the Wage Schedule. Loader and Excavator Operators: over 5 cubic yards capacity \$0.50 per hour over the rate listed in the
Wage Schedule. Shovel Operators: over 4 cubic yards capacity \$1.00 per hour over the rate listed in the Wage Schedule.

SHIFT WORK

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts
on all government mandated off-shift work

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:	\$ 34.85 up to 40 Hours
	After 40 hours \$ 25.55* PLUS

\$ 1.25 on all
hours worked

*This amount is subject to premium

OVERTIME PAY

See (B, E, P, *R, **U) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime..... See (5, 6, 8, 15, 25, 26) on OVERTIME PAGE

* For Holiday codes 8,15,25,26 code R applies

** For Holiday Codes 5 & 6 code U applies

Note: If employees are required to work on Easter Sunday they shall be paid at the rate of triple time.

REGISTERED APPRENTICES

(1)year terms at the following rate.

1st term	\$ 30.21
2nd term	36.25
3rd term	42.30
4th term	48.34
Supplemental Benefits per hour:	

26.85

8-137HH

Operating Engineer - Heavy&Highway

09/01/2024

JOB DESCRIPTION Operating Engineer - Heavy&Highway

DISTRICT 9

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: South of the North city line of Poughkeepsie

WAGES

Party Chief - One who directs a survey party

Instrument Man - One who runs the instrument and assists Party Chief

Rodman - One who holds the rod and in general, assists the Survey Crew

Categories cover GPS & Underground Surveying

Per Hour: 07/01/2024

Party Chief	\$ 84.94
Instrument Man	63.15
Rodman	53.43

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2024

All Categories
Straight Time: \$ 30.04* + \$7.64

Premium:
Time & 1/2 \$ 45.06* + \$7.64

Double Time \$ 60.08* + \$7.64

Non-Worked Holiday Supplemental Benefits:
\$ 21.83

OVERTIME PAY

See (B, *E, Q) on OVERTIME PAGE

* Doubletime paid on all hours in excess of 8 hours on Saturday

HOLIDAY

Paid: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

Overtime: See (5, 6, 7, 11, 12) on HOLIDAY PAGE

9-15Dh

Operating Engineer - Heavy&Highway - Tunnel

09/01/2024

JOB DESCRIPTION Operating Engineer - Heavy&Highway - Tunnel

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

PARTIAL COUNTIES

Dutchess: All the counties of Westchester and Putnam and the southern part of Dutchess County defined by the northern boundary line of the City of Poughkeepsie, then due east to Route 115, then north along Route 115 to Bedell Road, then east along Bedell Road to Van Wagner Road, then north along Van Wagner Road to Bower Road, then east along Bower Road to Route 44 and along Route 44 east to Route 343, then along Route 343 east to the northern boundary of Town of Dover Plains and east along the northern boundary of Town of Dover Plains to the border line of the State of Connecticut and bordered on the west by the middle of the Hudson River.

WAGES

GROUP I: Boom Truck, Cherry Picker, Clamshell, Crane(Crawler, Truck), Dragline, Drill Rig Casa Grande(Cat or Similar), Floating Crane(Crane on Barge-Under 100 Tons), Hoist Engineer(Concrete/Crane-Derrick-Mine Hoist), Knuckle Boom Crane, Rough Terrain Crane.

GROUP I-A: Auger(Truck or Truck Mounted), Boat Captain, Bull Dozer-all sizes, Central Mix Plant Operator, Chipper-all types, Close Circuit T.V., Combination Loader/Backhoe, Compactor with Blade, Concrete Finishing Machine, Gradall, Grader(Motor Grader), Elevator & Cage(Materials or Passengers), Excavator(and all attachments), Front End Loaders(1 1/2 yards and over), High Lift Lull, Hoist(Single, Double, Triple Drum), Hoist Portable Mobile Unit, Hoist Engineer(Material), Jack and Bore Machine, Log Skidder, Milling Machine, Moveable Concrete Barrier Transfer & Transport Vehicle, Mucking Machines. Overhead Crane, Paver(Concrete), Post Pounder of any type, Push Cats, Road Reclaimer, Robot Hammer(Brokk or similar), Robotic Equipment(Scope of Engineer Schedule), Ross Carrier and similar machines, Scrapers(20 yards struck and over), Side Boom, Slip Form Machine, Spreader(Asphalt), Trenching Machines, Telephies-Vermeer Concrete Saw, Tractor type demolition equipment, Vacuum Truck, Vibratory Roller (Riding) used in mainline paving operations.

GROUP I-B: Asphalt Mobile Conveyor/Transfer Machine, Road Paver(Asphalt).

GROUP II-A: Ballast Regulators, Compactor(Self-propelled), Fusion Machine, Rail Anchor Machines, Roller(4 ton and over), Scrapers(20 yard struck and under).

GROUP II-B: Mechanic(outside)all types, Shop Mechanic.

GROUP III: Air Tractor Drill, Asphalt Plant, Batch Plant, Boiler(High Pressure), Concrete Breaker(Track or Rubber Tire), Concrete Pump, Concrete Spreader, Excavator Drill, Farm Tractor, Forklift(all types of power), Gas Tapping(Live), Hydroseeder, Loader(1 1/2 yards and under), Locomotive(all sizes), Machine Pulling Sheeps Foot Roller, Portable Asphalt Plant, Portable Batch Plant, Portable Crusher(Apprentice), Powerhouse Plant, Roller(under 4 ton), Sheer Excavator, Skidsteer/Bobcat, Stone Crusher, Sweeper(with seat), Well Drilling Machine.

GROUP IV-A: Service Person(Grease Truck), Deckhand.

GROUP IV-B: Conveyor Belt Machine(Truck Mounted), Heater(all types), Lighting Unit(Portable), Maintenance Engineer(for Crane only), Mechanics Helper, Pump(Fireproofing), Pumps-Pump Station/Water/Sewer/Gypsum/Plaster, etc., Pump Truck(Sewer Jet or similar), Welding Machine(Steel Erection), Welders Helper.

GROUP V-A: Engineer(all Tower Cranes, all Climbing Cranes & all Cranes of 100 ton capacity or greater),Hoist Engineer(Steel-Sub Structure), Engineer-Pile Driver, Jersey-Spreader, Pavement breaker, Post Hole Digger

WAGES: (per hour)

07/01/2024

GROUP I	\$ 68.63
GROUP I-A	60.42
GROUP I-B	63.70
GROUP II-A	57.84
GROUP II-B	59.67
GROUP III	56.81
GROUP IV-A	51.57
GROUP IV-B	44.19
GROUP V-A	
Engineer-Cranes	77.82
Engineer-Pile Driver	75.13
Hoist Engineer	70.41
Jersey Spreader/Post Hole Digger	59.19

An additional 20% to wage when required to wear protective equipment on hazardous/toxic waste projects. Operators required to use two buckets pouring concrete on other than road pavement shall receive \$0.50 per hour over scale. Engineers operating cranes with booms 100 feet but less than 149 feet in length will be paid an additional \$2.00 per hour. Engineers operating cranes with booms 149 feet or over in length will be paid an additional \$3.00 per hour. Operators of shovels with a capacity over (4) cubic yards shall be paid an additional \$1.00 per hour. Operators of loaders with a capacity over (5) cubic yards shall be paid an additional \$0.50 per hour.

SHIFT WORK

A 15% premium on all hours paid, including overtime hours for 2nd, 3rd shifts
on all government mandated off-shift work

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker:

\$ 34.85 up to
40 hours
After 40 hours
\$25.55 plus
\$1.25 on all
hours worked

OVERTIME PAY

See (D, O, *U, V) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25, 26) on HOLIDAY PAGE

* Note: For Holiday codes 5 & 6, code U applies. For Holiday codes 8, 15, 25, 26, code R applies.

Note: If employees are required to work on Easter Sunday, they shall be paid at the rate of triple time.

REGISTERED APPRENTICES

(1)year terms at the following rates:

1st term	\$ 30.21
2nd term	36.25
3rd term	42.30
4th term	48.34

Supplemental Benefits per hour:

All terms	\$ 26.85

8-137Tun

Operating Engineer - Marine Dredging

09/01/2024

JOB DESCRIPTION Operating Engineer - Marine Dredging

DISTRICT 4

ENTIRE COUNTIES

Albany, Bronx, Cayuga, Clinton, Columbia, Dutchess, Essex, Franklin, Greene, Jefferson, Kings, Monroe, Nassau, New York, Orange, Oswego, Putnam, Queens, Rensselaer, Richmond, Rockland, St. Lawrence, Suffolk, Ulster, Washington, Wayne, Westchester

WAGES

These wages do not apply to Operating Engineers on land based construction projects. For those projects, please see the Operating Engineer Heavy/Highway Rates. The wage rates below for all equipment and operators are only for marine dredging work in navigable waters found in the counties listed above.

Per Hour: 07/01/2024

CLASS A1	\$ 45.26

Deck Captain, Leverman,
Mechanical Dredge Operator,
Licensed Tug Operator 1000HP or more.

CLASS A2	40.33

Crane Operator (360 swing)

CLASS B	To conform to Operating Engineer Prevailing Wage in locality where work is being performed including benefits.

Dozer, Front Loader
Operator on Land

CLASS B1	39.14

Derrick Operator (180 swing)
Spider/Spill Barge Operator

Operator II, Fill Placer, Engineer
Chief Mate, Electrician, Chief Welder,
Maintenance Engineer, Licensed Boat, Crew Boat Operator

CLASS B2 36.84
Certified Welder

CLASS C1 35.83
Drag Barge Operator,
Steward, Mate,
Assistant Fill Placer

CLASS C2 34.68
Boat Operator

CLASS D 28.81
Shoreman, Deckhand, Oiler,
Rodman, Scowman, Cook,
Messman, Porter/Janitor

SUPPLEMENTAL BENEFITS

Per Hour:

THE FOLLOWING SUPPLEMENTAL BENEFITS APPLY TO ALL CATEGORIES

All Classes A & B \$ 12.00 plus 7%
of straight time
wage, Overtime hours
add \$ 0.63

All Class C & D \$ 11.75 plus 7%
of straight time
wage, Overtime hours
add \$ 0.50

OVERTIME PAY

See (B2, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 26) on HOLIDAY PAGE

4-25a-MarDredge

Operating Engineer - Survey Crew - Consulting Engineer

09/01/2024

JOB DESCRIPTION Operating Engineer - Survey Crew - Consulting Engineer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

PARTIAL COUNTIES

Dutchess: That part in Dutchess County lying South of the North City line of Poughkeepsie.

WAGES

Feasibility and preliminary design surveying, any line and grade surveying for inspection or supervision of construction.

Per hour: 07/01/2024
Survey Classifications

Party Chief \$ 49.39
Instrument Man 40.96
Rodman 35.63

SUPPLEMENTAL BENEFITS

Per Hour:

All Crew Members: \$ 23.75

OVERTIME PAY

OVERTIME:.... See (B, E*, Q, V) ON OVERTIME PAGE.

*Double-time paid on the 9th hour on Saturday.

HOLIDAY

Paid: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

Overtime: See (5, 6, 7, 11, 16) on HOLIDAY PAGE

Painter	09/01/2024

JOB DESCRIPTION Painter	DISTRICT 8

ENTIRE COUNTIES
Bronx, Kings, Nassau, New York, Putnam, Queens, Richmond, Suffolk, Westchester

WAGES

Per hour:	07/01/2024	05/01/2025 Additional
Brush	52.86*	\$ 2.62**
Abatement/Removal of lead based or lead containing paint on materials to be repainted.	52.86*	
Spray & Scaffold	\$ 55.86*	
Fire Escape	55.86*	
Decorator	55.86*	
Paperhanger/Wall Coverer	55.09*	

*Subtract \$ 0.10 to calculate premium rate.

** To be allocated at a later date.

SHIFT WORK

Counties of Nassau, Putnam, Suffolk & Westchester; Agency/Government mandated off-shift work to be paid at time and one-half the hourly wage.

SUPPLEMENTAL BENEFITS

Per hour:	
Paperhanger	\$ 36.73
All others	34.31
Premium	38.28**

**Applies only to "All others" category, not paperhanger journeyworker.

OVERTIME PAY

See (A, E, R) on OVERTIME PAGE

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rate.

Per hour:	07/01/2024
Appr 1st term...	\$ 20.22*
Appr 2nd term...	25.93*
Appr 3rd term...	31.61*
Appr 4th term...	42.40*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental benefits:

Per Hour:	
Appr 1st term...	\$ 16.89
Appr 2nd term...	20.95
Appr 3rd term...	24.10
Appr 4th term...	30.57

8-NYDC9-B/S

Painter	09/01/2024

JOB DESCRIPTION Painter	DISTRICT 8

ENTIRE COUNTIES

Putnam, Suffolk, Westchester

PARTIAL COUNTIES

Nassau: All of Nassau except the areas described below: Atlantic Beach, Ceaderhurst, East Rockaway, Gibson, Hewlett, Hewlett Bay, Hewlett Neck, Hewlett Park, Inwood, Lawrence, Lido Beach, Long Beach, parts of Lynbrook, parts of Oceanside, parts of Valley Stream, and Woodmere. Starting on the South side of Sunrise Hwy in Valley Stream running east to Windsor and Rockaway Ave., Rockville Centre is the boundary line up to Lawson Blvd. turn right going west all the above territory. Starting at Union Turnpike and Lakeville Rd. going north to Northern Blvd. the west side of Lakeville road to Northern blvd. At Northern blvd. going east the district north of Northern blvd. to Port Washington Blvd. West of Port Washington blvd.to St.Francis Hospital then north of first traffic light to Port Washington and Sands Point, Manor HAVen, Harbour Acres.

WAGES

Per hour:	07/01/2024	05/01/2025
Drywall Taper:	\$ 52.86*	Additional
Scaffold:	\$ 55.86*	\$ 2.62**

*Subtract \$ 0.10 to calculate premium rate.

** To be allocated a later date.

SHIFT WORK

Agency/Government mandated off-shift work to be paid at time and one-half hourly wage

SUPPLEMENTAL BENEFITS

Per hour:	
Journeyman	\$ 34.31

OVERTIME PAY

See (A, E, R) on OVERTIME PAGE

HOLIDAY

Paid:	See (1) on HOLIDAY PAGE
Overtime:	See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages - Per Hour:

1500 hour terms at the following wage rate:

1st term	\$ 20.22*
2nd term	25.93*
3rd term	31.61*
4th term	42.40*

*Subtract \$ 0.10 to calculate premium rate.

Supplemental Benefits - Per hour:

One year term (1500 hours) at the following dollar amount.

1st year	\$ 16.89
2nd year	20.95
3rd year	24.10
4th year	30.57

8-NYDCT9-DWT

Painter - Bridge & Structural Steel

09/01/2024

JOB DESCRIPTION Painter - Bridge & Structural Steel

DISTRICT 8

ENTIRE COUNTIES

Albany, Bronx, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Kings, Montgomery, Nassau, New York, Orange, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per Hour:	
STEEL:	
Bridge Painting:	07/01/2024
	\$ 56.00
	+ 10.35*

ADDITIONAL \$7.00 per hour for POWER TOOL/SPRAY, whether straight time or overtime.

NOTE: All premium wages are to be calculated on base rate per hour only.

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (50 hour cap).

NOTE: Generally, for Bridge Painting Contracts, ALL WORKERS on and off the bridge (including Flagmen) are to be paid Painter's Rate; the contract must be ONLY for Bridge Painting.

SHIFT WORK

When directly specified in public agency or authority contract documents for an employer to work a second shift and works the second shift with employees other than from the first shift, all employees who work the second shift will be paid 10% of the base wage shift differential in lieu of overtime for the first eight (8) hours worked after which the employees shall be paid at time and one half of the regular wage rate. When a single irregular work shift is mandated in the job specifications or by the contracting agency, wages shall be paid at time and one half for single shifts between the hours of 3pm-11pm or 11pm-7am.

SUPPLEMENTAL BENEFITS

Per Hour:

Journeyworker:

\$ 12.43
+ 31.55*

* For the period of May 1st to November 15th, this amount is payable up to 40 hours. For the period of Nov 16th to April 30th, this amount is payable up to 50 hours. EXCEPTION: First and last week of employment, and for the weeks of Memorial Day, Independence Day and Labor Day, where the amount is paid for the actual number of hours worked (50 hour cap).

OVERTIME PAY

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (4, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wage - Per hour:

Apprentices: (1) year terms.

1st year	\$ 22.40 + 4.14
2nd year	\$ 33.60 + 6.21
3rd year	\$ 44.80 + 8.28
Supplemental Benefits - Per hour:	
1st year	\$ 1.16 + 12.62
2nd year	\$ 7.46 + 18.93
3rd year	\$ 9.94 + 25.24

NOTE: All premium wages are to be calculated on base rate per hour only.

8-DC-9/806/155-BrSS

Painter - Line Striping

09/01/2024

JOB DESCRIPTION Painter - Line Striping

DISTRICT 8

ENTIRE COUNTIES

Albany, Clinton, Columbia, Dutchess, Essex, Franklin, Fulton, Greene, Hamilton, Montgomery, Nassau, Orange, Putnam, Rensselaer, Rockland, Saratoga, Schenectady, Schoharie, Suffolk, Sullivan, Ulster, Warren, Washington, Westchester

WAGES

Per hour:

Painter (Striping-Highway):	07/01/2024	04/01/2025	04/01/2026
Striping-Machine Operator*	\$ 34.12	\$ 35.49	\$ 36.93

Linerman Thermoplastic	41.12	42.74	44.44

Note: * Includes but is not limited to: Positioning of cones and directing of traffic using hand held devices. Excludes the Driver/Operator of equipment used in the maintenance and protection of traffic safety.

SHIFT WORK

When directly specified in public agency or authority contract documents there shall be a 30% night shift premium pay differential for all work performed after 9:00pm and before 5:00am.

SUPPLEMENTAL BENEFITS

Per hour paid:

Journeyworker:

Striping Machine Operator: \$23.65 \$ 24.30 \$ 24.95

Linerman Thermoplastic: 23.65 24.30 24.95

OVERTIME PAY

See (B, B2, E2, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 20) on HOLIDAY PAGE

Overtime: See (5, 20) on HOLIDAY PAGE

REGISTERED APPRENTICES

One (1) year terms at the following wage rates:

1st Term:	\$ 16.00	\$ 16.00	\$ 16.00
2nd Term:	20.47	21.29	22.16
3rd Term:	27.30	28.39	29.54

Supplemental Benefits per hour:

All terms:	\$ 23.65	\$ 24.30	\$ 24.95

8-1456-LS

Painter - Metal Polisher

09/01/2024

JOB DESCRIPTION Painter - Metal Polisher

DISTRICT 8

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

	07/01/2024
Metal Polisher	\$ 39.33
Metal Polisher*	40.43
Metal Polisher**	43.33

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

SUPPLEMENTAL BENEFITS

Per Hour: 07/01/2024

Journeyworker:

All classification \$ 12.79

OVERTIME PAY

See (B, E, P, T) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

Overtime: See (5, 6, 11, 15, 16, 25, 26) on HOLIDAY PAGE

REGISTERED APPRENTICES

Wages per hour:

One (1) year term at the following wage rates:

07/01/2024

1st year	\$ 19.67
2nd year	21.63

3rd year	23.60
1st year*	\$ 22.06
2nd year*	22.07
3rd year*	24.14
1st year**	\$ 22.17
2nd year**	24.13
3rd year**	26.10

*Note: Applies on New Construction & complete renovation

** Note: Applies when working on scaffolds over 34 feet.

Supplemental benefits:

Per hour:

1st year	\$ 8.69
2nd year	8.69
3rd year	8.69

8-8A/28A-MP

Plumber

09/01/2024

JOB DESCRIPTION Plumber

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

Per hour:

07/01/2024

Plumber and

Steamfitter

\$ 63.76

SHIFT WORK

SHIFT WORK:

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker \$ 43.61

OVERTIME PAY

See (B, E, E2, Q, V) on OVERTIME PAGE

OVERTIME:.... See on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1)year terms at the following wages:

1st Term	\$ 23.75
2nd Term	27.23
3rd Term	31.47
4th Term	44.80
5th Term	48.05

Supplemental Benefits per hour:

1st term	\$ 17.94
2nd term	20.05
3rd term	23.82
4th term	31.51
5th term	33.42

8-21.1-ST

Plumber - HVAC / Service**09/01/2024**

JOB DESCRIPTION Plumber - HVAC / Service**DISTRICT 8****ENTIRE COUNTIES**

Dutchess, Putnam, Westchester

PARTIAL COUNTIES

Delaware: Only the townships of Middletown and Roxbury

Ulster: Entire County(including Wallkill and Shawangunk Prisons) except for remainder of Town of Shawangunk and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour: 07/01/2024

HVAC Service \$ 43.43
+ \$ 4.47*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker HVAC Service
\$ 30.39**OVERTIME PAY**

See (B, F, R) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

HVAC SERVICE

(1)year terms at the following wages:

1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.
\$ 19.66	\$ 23.32	\$ 29.05	\$ 35.73	\$ 38.83
+\$2.43*	+\$2.76*	+\$3.31*	+\$3.96*	+\$4.21*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental Benefits per hour:

Apprentices 07/01/2024

1st term	\$ 21.47
2nd term	23.05
3rd term	24.76
4th term	27.13
5th term	28.81

8-21.1&2-SF/Re/AC

Plumber - Jobbing & Alterations**09/01/2024**

JOB DESCRIPTION Plumber - Jobbing & Alterations**DISTRICT 8****ENTIRE COUNTIES**

Dutchess, Putnam, Westchester

PARTIAL COUNTIES

Ulster: Entire county (including Wallkill and Shawangunk Prisons in Town of Shawangunk) EXCEPT for remainder of Town of Shawangunk, and Towns of Plattekill, Marlboro, and Wawarsing.

WAGES

Per hour: 07/01/2024

Journeyworker: \$ 49.63

Repairs, replacements and alteration work is any repair or replacement of a present plumbing system that does not change existing roughing or water supply lines.

SHIFT WORK

When directly specified in public agency or authority contract documents, shift work outside the regular hours of work shall be comprised of eight (8) hours per shift not including Saturday, Sundays and holidays. One half (1/2) hour shall be allowed for lunch after the first four (4) hours of each shift. Wage and Fringes for shift work shall be straight time plus a shift premium of twenty-five (25%) percent. A minimum of five days Monday through Friday must be worked to establish shift work.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker

\$ 36.44

OVERTIME PAY

See (B, *E, E2, Q, V) on OVERTIME PAGE

*When used as a make-up day, hours after 8 on Saturday shall be paid at time and one half.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year terms at the following wages:

1st year	\$ 21.35
2nd year	23.73
3rd year	25.87
4th year	36.28
5th year	38.34

Supplemental Benefits per hour:

1st year	\$ 12.11
2nd year	14.21
3rd year	18.38
4th year	24.86
5th year	26.96

8-21.3-J&A

Roofer

09/01/2024

JOB DESCRIPTION Roofer

DISTRICT 9

ENTIRE COUNTIES

Bronx, Dutchess, Kings, New York, Orange, Putnam, Queens, Richmond, Rockland, Sullivan, Ulster, Westchester

WAGES

Per Hour: 07/01/2024

Roofer/Waterproofer \$ 48.50
+ \$7.00*

* This portion is not subjected to overtime premiums.

Note: Abatement/Removal of Asbestos containing roofs and roofing material is classified as Roofer.

SUPPLEMENTAL BENEFITS

Per Hour: \$ 31.87

OVERTIME PAY

See (B, H) on OVERTIME PAGE

Note: An observed holiday that falls on a Sunday will be observed the following Monday.

HOLIDAY

Overtime: See (5, 6) on HOLIDAY PAGE

REGISTERED APPRENTICES

(1) year term apprentices indentured prior to 01/01/2023

1st	2nd	3rd	4th
\$ 16.97	\$ 24.25	\$ 29.10	\$ 36.37
	+ 3.50*	+ 4.20*	+ 5.26*

Supplements:

1st	2nd	3rd	4th
\$ 4.10	\$ 16.17	\$ 19.31	\$ 24.02

* This portion is not subjected to overtime premiums.

(1) year term apprentices indentured after 01/01/2023

	1st	2nd	3rd	4th	5th
	\$ 18.43	\$ 21.82	\$ 24.25	\$ 29.10	\$ 36.37
		+ 3.16*	+ 3.50*	+ 4.20*	+ 5.26
Supplements:					
	1st	2nd	3rd	4th	5th
	\$ 7.73	\$ 14.59	\$ 16.17	\$ 19.31	\$ 24.02

* This portion is not subjected to overtime premiums.

9-8R

Sheetmetal Worker	09/01/2024

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 8

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

	07/01/2024
SheetMetal Worker	\$ 49.51
	+ 3.71*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

SHIFT WORK

For all NYS D.O.T. and other Governmental mandated off-shift work:
10% increase for additional shifts for a minimum of five (5) days

SUPPLEMENTAL BENEFITS

Journeyworker \$ 46.20

OVERTIME PAY

OVERTIME:.. See (B, E, Q,) on OVERTIME PAGE.

HOLIDAY

Paid: See (1) on HOLIDAY PAGE
Overtime: See (5, 6, 8, 15, 16, 23) on HOLIDAY PAGE

REGISTERED APPRENTICES

1st	2nd	3rd	4th	5th	6th	7th	8th
\$ 20.20	\$ 20.81	\$ 23.12	\$ 25.42	\$ 27.74	\$ 30.08	\$ 32.86	\$ 35.63
+ 1.48*	+ 1.67*	+ 1.86*	+ 2.04*	+ 2.23*	+ 2.41*	+ 2.60*	+ 2.78*

*This portion of the benefit is NOT subject to the SAME PREMIUM as shown for overtime.

Supplemental Benefits per hour:

Apprentices	
1st term	\$ 18.07
2nd term	22.24
3rd term	24.71
4th term	27.21
5th term	29.67
6th term	32.12
7th term	34.12
8th term	36.15

8-38

Sheetmetal Worker	09/01/2024

JOB DESCRIPTION Sheetmetal Worker

DISTRICT 4

ENTIRE COUNTIES

Bronx, Kings, Nassau, New York, Queens, Richmond, Rockland, Suffolk, Westchester

WAGES

Per Hour:	07/01/2024	08/01/2024
Sign Erector	\$ 58.00	\$ 60.00

NOTE: Structurally Supported Overhead Highway Signs(See STRUCTURAL IRON WORKER CLASS)

SUPPLEMENTAL BENEFITS

Per Hour:	07/01/2024	08/01/2024
Sign Erector	\$ 57.12	\$ 58.31

OVERTIME PAY

See (B, F, S) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 10, 11, 12, 16, 25) on HOLIDAY PAGE

REGISTERED APPRENTICES

Per Hour:

6 month Terms at the following percentage of Sign Erectors wage rate:

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
35%	40%	45%	50%	55%	60%	65%	70%	75%	80%

SUPPLEMENTAL BENEFITS

Per Hour:

07/01/2024

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 18.27	\$ 20.75	\$ 25.22	\$ 25.70	\$ 34.66	\$ 37.74	\$ 41.65	\$ 44.78	\$ 47.93	\$ 51.04

08/01/2024

\$ 18.65	\$ 21.16	\$ 23.69	\$ 26.22	\$35.39	\$ 38.52	\$ 42.55	\$ 45.75	\$ 48.96	\$ 52.15 4-137-SE

Sprinkler Fitter 09/01/2024

JOB DESCRIPTION Sprinkler Fitter

DISTRICT 1

ENTIRE COUNTIES

Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, Westchester

WAGES

Per hour 07/01/2024

Sprinkler \$ 53.34
Fitter

SUPPLEMENTAL BENEFITS

Per hour

Journeyworker \$ 30.77

OVERTIME PAY

See (B, E, Q) on OVERTIME PAGE

HOLIDAY

Paid: See (1) on HOLIDAY PAGE

Overtime: See (5, 6) on HOLIDAY PAGE

Note: When a holiday falls on Sunday, the following Monday shall be considered a holiday and all work performed on either day shall be at the double time rate. When a holiday falls on Saturday, the preceding Friday shall be considered a holiday and all work performed on either day shall be at the double time rate.

REGISTERED APPRENTICES

Wages per hour

One Half Year terms at the following wage.

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 25.89	\$ 28.77	\$ 31.39	\$ 34.27	\$ 37.14	\$ 40.02	\$ 42.90	\$ 45.77	\$ 48.65	\$ 51.53

Supplemental Benefits per hour

1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
\$ 9.18	\$ 9.18	\$ 20.90	\$ 20.90	\$ 21.15	\$ 21.15	\$ 21.15	\$ 21.15	\$ 21.15	\$ 21.15 1-669.2

Teamster - Building / Heavy&Highway 09/01/2024

JOB DESCRIPTION Teamster - Building / Heavy&Highway

DISTRICT 8

ENTIRE COUNTIES

Putnam, Westchester

WAGES

GROUP A: Straight Trucks (6-wheeler and 10-wheeler), A-frame, Winch, Dynamite Seeding, Mulching, Agitator, Water, Attenuator, Light Towers, Cement (all types), Suburban, Station Wagons, Cars, Pick Ups, any vehicle carrying materials of any kind.

GROUP AA: Tack Coat

GROUP B: Tractor & Trailers (all types).

GROUP BB: Tri-Axle, 14 Wheeler

GROUP C: Low Boy (carrying equipment).

GROUP D: Fuel Trucks, Tire Trucks.

GROUP E: Off-road Equipment (over 40 tons): Athey Wagons, Belly Dumps, Articulated Dumps, Trailer Wagons.

GROUP F: Off-road Equipment (over 40 tons) Euclid, DJB.

GROUP G: Off-road Equipment (under 40 tons) Athey Wagons, Belly Articulated Dumps, Trailer Wagons.

GROUP H: Off-road Equipment (under 40 tons), Euclid.

GROUP HH: Off-road Equipment (under 40 tons) D.J.B.

GROUP I: Off-road Equipment (under 40 tons) Darts.

GROUP II: Off-road Equipment (under 40 tons) RXS.

WAGES: (per hour)

07/01/2024

GROUP A	\$ 47.86*
GROUP AA	50.86*
GROUP B	48.48*
GROUP BB	47.98*
GROUP C	50.61*
GROUP D	48.31*
GROUP E	48.86*
GROUP F	49.86*
GROUP G	48.61*
GROUP H	49.23*
GROUP HH	49.61*
GROUP I	49.36*
GROUP II	49.73*

* To calculate premium wage, subtract \$.10 from the hourly wage.

Note: Fuel truck operators on construction sites addit. \$5.00 per day.

For work on hazardous/toxic waste site addit. 20% of hourly rate.

SHIFT WORK

When mandated by the contracting agency, DOT, or any governmental agency contracts shall receive a shift differential of fifteen (15%) above the wage rate.

SUPPLEMENTAL BENEFITS

Per hour:

Journeyworker

First 40 hours	\$ 37.33
41st-45th hours	16.73
Over 45 hours	1.60

OVERTIME PAY

See (B, E, P, R) on OVERTIME PAGE

HOLIDAY

Paid: See (5, 6, 8, 15, 25) on HOLIDAY PAGE

Overtime: See (5, 6, 8, 15, 25) on HOLIDAY PAGE

8-456

Welder

09/01/2024

JOB DESCRIPTION Welder

DISTRICT 1

ENTIRE COUNTIES

Albany, Allegany, Bronx, Broome, Cattaraugus, Cayuga, Chautauqua, Chemung, Chenango, Clinton, Columbia, Cortland, Delaware, Dutchess, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Herkimer, Jefferson, Kings, Lewis, Livingston, Madison, Monroe, Montgomery, Nassau, New York, Niagara, Oneida, Onondaga, Ontario, Orange, Orleans, Oswego, Otsego, Putnam, Queens, Rensselaer, Richmond, Rockland, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, St. Lawrence, Steuben, Suffolk, Sullivan, Tioga, Tompkins, Ulster, Warren, Washington, Wayne, Westchester, Wyoming, Yates

WAGES

Per hour 07/01/2024

Welder: To be paid the same rate of the mechanic performing the work.*

*EXCEPTION: If a specific welder certification is required, then the 'Certified Welder' rate in that trade tag will be paid.

OVERTIME PAY

HOLIDAY

1-As Per Trade

Overtime Codes

Following is an explanation of the code(s) listed in the OVERTIME section of each classification contained in the attached schedule. Additional requirements may also be listed in the HOLIDAY section.

NOTE: Supplemental Benefits are 'Per hour worked' (for each hour worked) unless otherwise noted

- (AA) Time and one half of the hourly rate after 7 and one half hours per day
- (A) Time and one half of the hourly rate after 7 hours per day
- (B) Time and one half of the hourly rate after 8 hours per day
- (B1) Time and one half of the hourly rate for the 9th & 10th hours week days and the 1st 8 hours on Saturday.
Double the hourly rate for all additional hours
- (B2) Time and one half of the hourly rate after 40 hours per week
- (C) Double the hourly rate after 7 hours per day
- (C1) Double the hourly rate after 7 and one half hours per day
- (D) Double the hourly rate after 8 hours per day
- (D1) Double the hourly rate after 9 hours per day
- (E) Time and one half of the hourly rate on Saturday
- (E1) Time and one half 1st 4 hours on Saturday; Double the hourly rate all additional Saturday hours
- (E2) Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E3) Between November 1st and March 3rd Saturday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather, provided a given employee has worked between 16 and 32 hours that week
- (E4) Saturday and Sunday may be used as a make-up day at straight time when a day is lost during that week due to inclement weather
- (E5) Double time after 8 hours on Saturdays
- (F) Time and one half of the hourly rate on Saturday and Sunday
- (G) Time and one half of the hourly rate on Saturday and Holidays
- (H) Time and one half of the hourly rate on Saturday, Sunday, and Holidays
- (I) Time and one half of the hourly rate on Sunday
- (J) Time and one half of the hourly rate on Sunday and Holidays
- (K) Time and one half of the hourly rate on Holidays
- (L) Double the hourly rate on Saturday
- (M) Double the hourly rate on Saturday and Sunday
- (N) Double the hourly rate on Saturday and Holidays
- (O) Double the hourly rate on Saturday, Sunday, and Holidays
- (P) Double the hourly rate on Sunday
- (Q) Double the hourly rate on Sunday and Holidays
- (R) Double the hourly rate on Holidays
- (S) Two and one half times the hourly rate for Holidays

- (S1) Two and one half times the hourly rate the first 8 hours on Sunday or Holidays One and one half times the hourly rate all additional hours.
- (T) Triple the hourly rate for Holidays
- (U) Four times the hourly rate for Holidays
- (V) Including benefits at SAME PREMIUM as shown for overtime
- (W) Time and one half for benefits on all overtime hours.
- (X) Benefits payable on Paid Holiday at straight time. If worked, additional benefit amount will be required for worked hours. (Refer to other codes listed.)

Holiday Codes

PAID Holidays:

Paid Holidays are days for which an eligible employee receives a regular day's pay, but is not required to perform work. If an employee works on a day listed as a paid holiday, this remuneration is in addition to payment of the required prevailing rate for the work actually performed.

OVERTIME Holiday Pay:

Overtime holiday pay is the premium pay that is required for work performed on specified holidays. It is only required where the employee actually performs work on such holidays. The applicable holidays are listed under HOLIDAYS: OVERTIME. The required rate of pay for these covered holidays can be found in the OVERTIME PAY section listings for each classification.

Following is an explanation of the code(s) listed in the HOLIDAY section of each classification contained in the attached schedule. The Holidays as listed below are to be paid at the wage rates at which the employee is normally classified.

- (1) None
- (2) Labor Day
- (3) Memorial Day and Labor Day
- (4) Memorial Day and July 4th
- (5) Memorial Day, July 4th, and Labor Day
- (6) New Year's, Thanksgiving, and Christmas
- (7) Lincoln's Birthday, Washington's Birthday, and Veterans Day
- (8) Good Friday
- (9) Lincoln's Birthday
- (10) Washington's Birthday
- (11) Columbus Day
- (12) Election Day
- (13) Presidential Election Day
- (14) 1/2 Day on Presidential Election Day
- (15) Veterans Day
- (16) Day after Thanksgiving
- (17) July 4th
- (18) 1/2 Day before Christmas
- (19) 1/2 Day before New Years
- (20) Thanksgiving
- (21) New Year's Day
- (22) Christmas
- (23) Day before Christmas
- (24) Day before New Year's
- (25) Presidents' Day
- (26) Martin Luther King, Jr. Day
- (27) Memorial Day
- (28) Easter Sunday

(29) Juneteenth

New York State Department of Labor - Bureau of Public Work
State Office Building Campus
Building 12 - Room 130
Albany, New York 12226

REQUEST FOR WAGE AND SUPPLEMENT INFORMATION

As Required by Articles 8 and 9 of the NYS Labor Law

Fax (518) 485-1870 or mail this form for new schedules or for determination for additional occupations.

This Form Must Be Typed

Submitted By:

(Check Only One)

☐

Contracting Agency

☐

Architect or Engineering Firm

☐

Public Work District Office

Date:

A. Public Work Contract to be let by: (Enter Data Pertaining to Contracting/Public Agency)

1. Name and complete address ☐ (Check if new or change)

Telephone

Fax

E-Mail:

2. NY State Units (see Item 5).

☐

01 DOT

☐

02 OGS

☐

03 Dormitory Authority

☐

04 State University
Construction Fund

☐

05 Mental Hygiene
Facilities Corp.

☐

06 OTHER N.Y. STATE UNIT

☐

07 City

☐

08 Local School District

☐

09 Special Local District, i.e.,
Fire, Sewer, Water District

☐

10 Village

☐

11 Town

☐

12 County

☐

13 Other Non-N.Y. State
(Describe)

3. SEND REPLY TO ☐ (check if new or change)
Name and complete address:

Telephone

Fax

E-Mail:

4. SERVICE REQUIRED. Check appropriate box and provide project information.

☐

New Schedule of Wages and Supplements.

APPROXIMATE BID DATE :

☐

Additional Occupation and/or Redetermination

PRC NUMBER ISSUED PREVIOUSLY FOR
THIS PROJECT :

OFFICE USE ONLY

B. PROJECT PARTICULARS

5. Project Title

Description of Work

Contract Identification Number

Note: For NYS units, the OSC Contract No.

6. Location of Project:

Location on Site

Route No/Street Address

Village or City

Town

County

7. Nature of Project - Check One:

☐

1. New Building

☐

2. Addition to Existing Structure

☐

3. Heavy and Highway Construction (New and Repair)

☐

4. New Sewer or Waterline

☐

5. Other New Construction (Explain)

☐

6. Other Reconstruction, Maintenance, Repair or Alteration

☐

7. Demolition

☐

8. Building Service Contract

8. OCCUPATION FOR PROJECT :

☐

Construction (Building, Heavy
Highway/Sewer/Water)

☐

Tunnel

☐

Residential

☐

Landscape Maintenance

☐

Elevator maintenance

☐

Exterminators, Fumigators

☐

Fire Safety Director, NYC Only

☐

Fuel Delivery

☐

Guards, Watchmen

☐

Janitors, Porters, Cleaners,
Elevator Operators

☐

Moving furniture and
equipment

☐

Trash and refuse removal

☐

Window cleaners

☐

Other (Describe)

9. Does this project comply with the Wicks Law involving separate bidding? YES ☐ NO ☐

10. Name and Title of Requester

Signature



NEW YORK STATE DEPARTMENT OF LABOR
Bureau of Public Work - Debarment List

**LIST OF EMPLOYERS INELIGIBLE TO BID ON OR BE
AWARDED ANY PUBLIC WORK CONTRACT**

Under Article 8 and Article 9 of the NYS Labor Law, a contractor, sub-contractor and/or its successor shall be debarred and ineligible to submit a bid on or be awarded any public work or public building service contract/sub-contract with the state, any municipal corporation or public body for a period of five (5) years from the date of debarment when:

- Two (2) final determinations have been rendered within any consecutive six-year (6) period determining that such contractor, sub-contractor and/or its successor has WILLFULLY failed to pay the prevailing wage and/or supplements;
- One (1) final determination involves falsification of payroll records or the kickback of wages and/or supplements.

The agency issuing the determination and providing the information, is denoted under the heading 'Fiscal Officer'. DOL = New York State Department of Labor; NYC = New York City Comptroller's Office; AG = New York State Attorney General's Office; DA = County District Attorney's Office.

Debarment Database: To search for contractors, sub-contractors and/or their successors debarred from bidding or being awarded any public work contract or subcontract under NYS Labor Law Articles 8 and 9, or under NYS Workers' Compensation Law Section 141-b, access the database at this link: <https://apps.labor.ny.gov/EDList/searchPage.do>

For inquiries please call 518-457-5589.

NYSDOL Bureau of Public Work Debarment List 08/30/2024

Article 8

AGENCY	Fiscal Officer	FEIN	EMPLOYER NAME	EMPLOYER DBA NAME	ADDRESS	DEBARMENT START DATE	DEBARMENT END DATE
DOL	DOL	*****5754	0369 CONTRACTORS, LLC		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL	*****5784	A.J.M. TRUCKING, INC.		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	AG	*****1812	ADVANCED BUILDERS & LAND DEVELOPMENT, INC.		400 OSER AVE #2300HAUPPAUGE NY 11788	09/11/2019	09/11/2024
DOL	NYC		ALL COUNTY SEWER & DRAIN, INC.		7 GREENFIELD DR WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL	*****8387	AMERICAN PAVING & MASONRY, CORP.		8 FOREST AVE GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL	*****8654	AMERICAN PAVING, INC.		8 FORREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	NYC		AMJED PARVEZ		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL		ANGELO F COKER		2610 SOUTH SALINA STREET SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		ANGELO GARCIA		515 WEST AVE UNIT PH 13NORWALK CT 06850	05/12/2021	05/12/2026
DOL	DOL		ANGELO STANCO		8 FOREST AVE. GLEN COVE NY 11542	05/24/2024	05/24/2029
DOL	DOL		ANGELO TONDO		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	*****4231	ANKER'S ELECTRIC SERVICE, INC.		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL		ANTHONY MONGELLI		PO BOX 2064 MONROE NY 10950	02/12/2024	02/12/2029
DOL	NYC		ARADCO CONSTRUCTION CORP		115-46 132RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL		ARNOLD A. PAOLINI		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC		ARSHAD MEHMOOD		168-42 88TH AVENUE JAMAICA NY 11432	11/20/2019	11/20/2024
DOL	NYC		AVM CONSTRUCTION CORP		117-72 123RD ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	NYC		AZIDABEGUM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	*****8421	B & B DRYWALL, INC		206 WARREN AVE APT 1WHITE PLAINS NY 10603	12/14/2021	12/14/2026
DOL	DOL		B&L RENOVATION CO.		618 OCEAN PARKWAY APT A6BROOKLYN NY 11230	09/17/2020	09/17/2025
DOL	DOL		BERNARD BEGLEY		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	NYC	*****2113	BHW CONTRACTING, INC.		401 HANOVER AVENUE STATEN ISLAND NY 10304	01/11/2021	01/11/2026
DOL	DOL	*****3627	BJB CONSTRUCTION CORP.		38 LONG RIDGE ROAD BEDFORD NY 10506	12/18/2019	12/18/2024
DOL	DOL	*****5078	BLACK RIVER TREE REMOVAL, LLC		29807 ANDREWS ROAD BLACK RIVER NY 13032	10/17/2023	10/17/2028
DOL	DOL		BRADLEY J SCHUKA		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	DOL	*****9383	C.C. PAVING AND EXCAVATING, INC.		2610 SOUTH SALINA ST SUITE 12SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL	*****4083	C.P.D. ENTERPRISES, INC		P.O BOX 281 WALDEN NY 12586	03/03/2020	03/03/2025
DOL	DOL	*****5161	CALADRI DEVELOPMENT CORP.		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	DOL	*****3391	CALI ENTERPRISES, INC.		1223 PARK STREET PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		CALVIN WALTERS		465 EAST THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL	*****4155	CASA BUILDERS, INC.	FRIEDLANDER CONSTRUCTI ON	64 N PUTT CONNERS ROAD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	AG	*****7247	CENTURY CONCRETE CORP		2375 RAYNOR ST RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	*****0026	CHANTICLEER CONSTRUCTION LLC		4 BROTHERS ROAD WAPPINGERS FALLS NY 12590	10/20/2020	10/20/2025
DOL	NYC	*****2117	CHARAN ELECTRICAL ENTERPRISES		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028

NYSDOL Bureau of Public Work Debarment List 08/30/2024

Article 8

DOL	NYC		CHARLES ZAHRADKA		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025
DOL	DOL		CHRISTOPHER GRECO		26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL		CRAIG JOHANSEN		10 SOUTH 5TH ST LOCUST VALLEY NY 11560	09/26/2022	09/26/2027
DOL	DOL	****3228	CROSS-COUNTY LANDSCAPING AND TREE SERVICE, INC.	ROCKLAND TREE SERVICE	26 NORTH MYRTLE AVENUE SPRING VALLEY NY 10956	02/18/2021	02/18/2026
DOL	DOL	****7619	DANCO CONSTRUCTION UNLIMITED INC.		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL		DANIEL ROBERT MCNALLY		7 GREENFIELD DRIVE WARWICK NY 10990	03/25/2022	03/25/2027
DOL	DOL		DARIAN L COKER		2610 SOUTH SALINA ST SUITE 2CSYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		DAVID FRIEDLANDER		64 NORTH PUTT CORNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	NYC		DAVID WEINER		14 NEW DROP LANE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL		DINA TAYLOR		64 N PUTT CONNERS RD NEW PALTZ NY 12561	05/10/2023	05/10/2028
DOL	DOL	****5175	EAGLE MECHANICAL AND GENERAL CONSTRUCTION LLC		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	AG		EDWIN HUTZLER		23 NORTH HOWELLS RD BELLPORT NY 11713	08/04/2021	08/04/2026
DOL	DA		EDWIN HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	****0780	EMES HEATING & PLUMBING CONTR		5 EMES LANE MONSEY NY 10952	01/20/2002	01/20/3002
DOL	DOL		EMIL KISZKO		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	****3298	EMJACK CONSTRUCTION CORP.		84 DIAMOND ST BROOKLYN NY 11222	07/18/2024	07/18/2029
DOL	DOL	****3298	EMJACK CONSTRUCTION LLC		4192 SIR ANDREW CIRCLE DOYLESTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL		EUGENIUSZ "GINO" KUCHAR		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	DA		FREDERICK HUTZLER		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	NYC	****6616	G & G MECHANICAL ENTERPRISES, LLC.		1936 HEMPSTEAD TURNPIKE EAST MEDOW NY 11554	11/29/2019	11/29/2024
DOL	DOL	****2998	G.E.M. AMERICAN CONSTRUCTION CORP.		195 KINGSLAND AVE BROOKLYN NY 11222	12/22/2023	12/22/2028
DOL	NYC		GAYATRI MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DA		GEORGE LUCEY		150 KINGS STREET BROOKLYN NY 11231	01/19/1998	01/19/2998
DOL	DA		GIOVANNA TRAVALJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DA	****0213	GORILLA CONTRACTING GROUP, LLC		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		HANS RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	DOL		HERBERT CLEMEN		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	****9211	J. WASE CONSTRUCTION CORP.		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		J.M.J CONSTRUCTION		151 OSTRANDER AVENUE SYRACUSE NY 13205	11/21/2022	11/21/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON CONSTRUCTION		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R. NELSON, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027

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DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	12/12/2022	12/12/2027
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		J.R.N COMPANIES, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	J.R.N. CONSTRUCTION, LLC		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JAMES J. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		JASON P. RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****7993	JBS DIRT, INC.		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL	*****2435	JEFFEL D. JOHNSON	JMJ7 AND SON	5553 CAIRNSTRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JEFFEL JOHNSON ELITE CARPENTER REMODEL AND CONSTRUCTION		C2 EVERGREEN CIRCLE LIVERPOOL NY 13090	11/21/2022	11/21/2027
DOL	DOL	*****2435	JEFFREY M. JOHNSON	JMJ7 AND SON	5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	NYC		JENNIFER GUERRERO		1936 HEMPSTEAD TURNPIKE EAST MEADOW NY 11554	11/29/2019	11/29/2024
DOL	DOL		JIM PLAUGHER		17613 SANTE FE LINE ROAD WAYNEFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL		JMJ7 & SON CONSTRUCTION, LLC		5553 CAIRNS TRAIL LIVERPOOL NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 AND SONS CONTRACTORS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS		7014 13TH AVENUE BROOKLYN NY 11228	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS AND SONS		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JMJ7 CONTRACTORS, LLC		5553 CAIRNS TRAIL CLAY NY 13041	11/21/2022	11/21/2027
DOL	DOL		JOHN GOCEK		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL		JOHN MARKOVIC		47 MANDON TERRACE HAWTHORN NJ 07506	03/29/2021	03/29/2026
DOL	DOL		JOHN WASE		8545 RT 9W ATHENS NY 12015	03/09/2021	03/09/2026
DOL	DOL		JORGE RAMOS		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	DOL		JOSEPH K. SALERNO		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL		JOSEPH K. SALERNO II		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL	*****5116	JP RACE PAINTING, INC. T/A RACE PAINTING		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		JRN CONSTRUCTION CO, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL	*****1147	JRN CONSTRUCTION, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028

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DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		JRN PAVING, LLC		531 THIRD STREET ALBANY NY 12206	11/07/2023	11/07/2028
DOL	DOL		JULIUS AND GITA BEHREND		5 EMES LANE MONSEY NY 10952	11/20/2002	11/20/3002
DOL	DOL		KARIN MANGIN		796 PHELPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	DOL		KATE E. CONNOR		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KEAN INDUSTRIES, LLC		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL	*****2959	KELC DEVELOPMENT, INC		7088 INTERSTATE ISLAND RD SYRACUSE NY 13209	03/31/2021	03/31/2026
DOL	DOL		KIMBERLY F. BAKER		7901 GEE ROAD CANASTOTA NY 13032	08/17/2021	08/17/2026
DOL	DOL		KMA GROUP II, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL	*****1833	KMA GROUP INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KMA INSULATION, INC.		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028
DOL	DOL		KRIN HEINEMANN		2345 ROUTE 52, SUITE 2N HOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	NYC		KULWANT S. DEOL		9-11 40TH AVENUE LONG ISLAND CITY NY 11101	09/26/2023	09/26/2028
DOL	DA	*****8816	LAKE CONSTRUCTION AND DEVELOPMENT CORPORATION		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	10/25/2022	10/25/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	12/22/2022	12/22/2027
DOL	DOL		LEROY E. NELSON JR		531 THIRD ST ALBANY NY 12206	11/07/2023	11/07/2028
DOL	AG	*****3291	LINTECH ELECTRIC, INC.		3006 TILDEN AVE BROOKLYN NY 11226	02/16/2022	02/16/2027
DOL	DOL		LOUIS A. CALICCHIA		1223 PARK ST. PEEKSKILL NY 10566	05/17/2021	05/17/2026
DOL	NYC		LUBOMIR PETER SVOBODA		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	NYC		M & L STEEL & ORNAMENTAL IRON CORP.		27 HOUSMAN AVE STATEN ISLAND NY 10303	12/26/2019	12/26/2024
DOL	DOL	*****2196	MAINSTREAM SPECIALTIES, INC.		11 OLD TOWN RD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DA		MANUEL P TOBIO		150 KINGS STREET BROOKLYN NY 14444	08/19/1998	08/19/2998
DOL	DA		MANUEL TOBIO		150 KINGS STREET BROOKLYN NY 11231	08/19/1998	08/19/2998
DOL	DOL		MAQSOOD AHMAD		618 OCEAN PKWY BROOKLYN NY 11230	09/17/2020	09/17/2025
DOL	NYC		MARIA NUBILE		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	NYC	*****9926	MILLENNIUM FIRE PROTECTION, LLC		325 W. 38TH STREET SUITE 204NEW YORK NY 10018	11/14/2019	11/14/2024
DOL	NYC	*****0627	MILLENNIUM FIRE SERVICES, LLC		14 NEW DROP LNE 2ND FLOORSTATEN ISLAND NY 10306	11/14/2019	11/14/2024
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	10/25/2022	10/25/2027
DOL	DOL	*****1320	MJC MASON CONTRACTING, INC.		42 FOWLER AVENUE CORTLAND MANOR NY 10567	01/24/2023	01/24/2028
DOL	NYC		MUHAMMED A. HASHEM		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	NYC		NAMOW, INC.		84-22 GRAND AVENUE ELMHURST NY 11373	03/10/2020	03/10/2025
DOL	DOL	*****7790	NATIONAL BUILDING & RESTORATION CORP		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028
DOL	DOL	*****1797	NATIONAL CONSTRUCTION SERVICES, INC		1010 TILDEN AVE UTICA NY 13501	07/24/2023	07/24/2028

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DOL	NYC		NAVIT SINGH		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		NELCO CONTRACTING, LLC		1024 BROADWAY ALBANY NY 12204	11/07/2023	11/07/2028
DOL	DA		NICHOLAS T. ANALITIS		505 MANHATTAN AVE WEST BABYLON NY 11704	10/05/2023	10/05/2028
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	03/01/2022	03/01/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	11/15/2022	11/15/2027
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	09/29/2021	09/29/2026
DOL	DOL		NICHOLE E. FRASER A/K/A NICHOLE RACE		3469 STATE RT. 69 PERISH NY 13131	02/09/2022	02/09/2027
DOL	DOL	****7429	NICOLAE I. BARBIR	BESTUCCO CONSTRUCTI ON, INC.	444 SCHANTZ ROAD ALLENTOWN PA 18104	09/17/2020	09/17/2025
DOL	NYC	****5643	NYC LINE CONTRACTORS, INC.		402 JERICHO TURNPIKE NEW HYDE PARK NY 11040	08/10/2022	08/10/2027
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PATRICK PENNACCHIO		2345 RT. 52 SUITE 2NHOPEWELL JUNCTION NY 12533	12/18/2023	12/18/2028
DOL	DOL		PAULINE CHAHALES		935 S LAKE BLVD MAHOPAC NY 10541	03/02/2021	03/02/2026
DOL	DOL		PETER STEVENS		11 OLD TOWN ROAD SELKIRK NY 12158	02/02/2021	02/02/2026
DOL	DOL		PETER STEVENS		8269 21ST ST BELLEROSSE NY 11426	12/22/2022	12/22/2027
DOL	DOL	****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL	****4168	PHANTOM CONSTRUCTION CORP.		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL	****0466	PRECISION BUILT FENCES, INC.		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	NYC		RASHEL CONSTRUCTION CORP		524 MCDONALD AVENUE BROOKLYN NY 11218	09/17/2020	09/17/2025
DOL	DOL	****1068	RATH MECHANICAL CONTRACTORS, INC.		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	DOL	****2633	RAW POWER ELECTRIC CORP.		3 PARK CIRCLE MIDDLETOWN NY 10940	07/11/2022	07/11/2027
DOL	DA	****7559	REGAL CONTRACTING INC.		24 WOODBINE AVE NORTHPORT NY 11768	10/01/2020	10/01/2025
DOL	DOL		RICHARD REGGIO		1617 MAIN ST PEEKSKILL NY 10566	03/03/2020	03/03/2025
DOL	DOL		ROBBYE BISSEAR		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	01/11/2003	01/11/3003
DOL	DOL		ROMEO WARREN		161 ROBYN RD MONROE NY 10950	07/11/2022	07/11/2027
DOL	DOL		RONALD MESSEN		14B COMMERCIAL AVE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	****7172	RZ & AL INC.		198 RIDGE AVENUE VALLEY STREAM NY 11581	06/06/2022	06/06/2027
DOL	DOL		SAL FRESINA MASONRY CONTRACTORS, INC.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL		SAL MASONRY CONTRACTORS, INC.		(SEE COMMENTS) SYRACUSE NY 13202	07/16/2021	07/16/2026
DOL	DOL	****9874	SALFREE ENTERPRISES INC		P.O BOX 14 2821 GARDNER RDPOMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		SALVATORE A FRESINA A/K/A SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	DOL		SAM FRESINA		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13218	07/16/2021	07/16/2026
DOL	NYC	****0349	SAM WATERPROOFING INC		168-42 88TH AVENUE APT.1 AJAMAICA NY 11432	11/20/2019	11/20/2024
DOL	DA	****0476	SAMCO ELECTRIC CORP.		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	NYC	****1130	SCANA CONSTRUCTION CORP.		863 WASHINGTON STREET FRANKLIN SQUARE NY 11010	03/10/2020	03/10/2025

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DOL	DOL	****2045	SCOTT DUFFIE	DUFFIE'S ELECTRIC, INC.	P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	DOL		SCOTT DUFFIE		P.O BOX 111 CORNWALL NY 12518	03/03/2020	03/03/2025
DOL	DA		SILVANO TRAVAJA		3735 9TH ST LONG ISLAND CITY NY 11101	01/05/2023	01/05/2028
DOL	DOL	****0440	SOLAR GUYS INC.		8970 MIKE GARCIA DR MANASSAS VA 20109	07/16/2021	07/16/2026
DOL	NYC		SOMATIE RAMSUNAHAI		115-46 132ND ST SOUTH OZONE PARK NY 11420	09/17/2020	09/17/2025
DOL	DOL	****2221	SOUTH BUFFALO ELECTRIC, INC.		1250 BROADWAY ST BUFFALO NY 14212	02/03/2020	02/03/2025
DOL	NYC	****3661	SPANIER BUILDING MAINTENANCE CORP		200 OAK DRIVE SYOSSET NY 11791	03/14/2022	03/14/2027
DOL	DOL		STANADOS KALOGELAS		485 RAFT AVENUE HOLBROOK NY 11741	10/19/2021	10/19/2026
DOL	DOL	****3496	STAR INTERNATIONAL INC		89-51 SPRINGFIELD BLVD QUEENS VILLAGE NY 11427	08/11/2003	08/11/3003
DOL	DOL	****6844	STEAM PLANT AND CHX SYSTEMS INC.		14B COMMERCIAL AVENUE ALBANY NY 12065	11/14/2019	11/14/2024
DOL	DOL	****9528	STEEL-IT, LLC.		17613 SANTE FE LINE ROAD WAYNESFIELD OH 45896	07/16/2021	07/16/2026
DOL	DOL	****3800	SUBURBAN RESTORATION CO. INC.		5-10 BANTA PLACE FAIR LAWN PLACE NJ 07410	03/29/2021	03/29/2026
DOL	DOL	****9150	SURGE INC.		8269 21ST STREET BELLEROSE NY 11426	12/22/2022	12/22/2027
DOL	DOL		SYED RAZA		198 RIDGE AVENUE NY 11581	06/06/2022	06/06/2027
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	05/28/2024	05/28/2029
DOL	DOL		TARLOK SINGH		95-27 116TH STREET QUEENS NY 11419	07/12/2024	07/12/2029
DOL	DOL		TERRY THOMPSON		11371 RIDGE RD WOLCOTT NY 14590	02/03/2020	02/03/2025
DOL	DOL	****9733	TERSAL CONSTRUCTION SERVICES INC		107 FACTORY AVE P.O BOX 11070SYRACUSE NY 13208	07/16/2021	07/16/2026
DOL	DOL		TERSAL CONTRACTORS, INC.		221 GARDNER RD P.O BOX 14POMPEI NY 13138	07/16/2021	07/16/2026
DOL	DOL		TERSAL DEVELOPMENT CORP.		1935 TEALL AVENUE SYRACUSE NY 13206	07/16/2021	07/16/2026
DOL	DOL	****5766	THE COKER CORPORATION	COKER CORPORATIO N	2610 SOUTH SALINA ST SUITE 14SYRACUSE NY 13205	09/17/2020	09/17/2025
DOL	DOL		TIMOTHY PERCY		29807 ANDREWS ROAD BLACK RIVER NY 13612	10/17/2023	10/17/2028
DOL	DA	****1050	TRI STATE CONSTRUCTION OF NY CORP.		50-39 175TH PLACE FRESH MEADOWS NY 11365	03/28/2022	03/28/2027
DOL	DA	****4106	TRIPLE H CONCRETE CORP		2375 RAYNOR STREET RONKONKOMA NY 11779	08/04/2021	08/04/2026
DOL	DOL	****8210	UPSTATE CONCRETE & MASONRY CONTRACTING CO INC		449 WEST MOMBSHA ROAD MONROE NY 10950	06/06/2022	06/06/2027
DOL	DOL	****6418	VALHALLA CONSTRUCTION, LLC.		796 PHLEPS ROAD FRANKLIN LAKES NJ 07417	12/01/2020	12/01/2025
DOL	NYC	****2426	VICKRAM MANGRU	VICK CONSTRUCTI ON	21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	NYC		VICKRAM MANGRU		21 DAREWOOD LANE VALLEY STREAM NY 11581	09/17/2020	09/17/2025
DOL	DOL		VIKTORIA RATH		24 ELDOR AVENUE NEW CITY NY 10956	02/03/2020	02/03/2025
DOL	NYC	****3673	WALTERS AND WALTERS, INC.		465 EAST AND THIRD ST MT. VERNON NY 10550	09/09/2019	09/09/2024
DOL	DOL	****8266	WILLIAM CHRIS MCCLENDON	MCCLENDON ASPHALT PAVING	1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM CHRIS MCCLENDON		1646 FALLS STREET NIAGARA FALLS NY 14303	05/01/2023	05/01/2028
DOL	DOL		WILLIAM G. PROERFRIEDT		85 SPRUCEWOOD ROAD WEST BABYLON NY 11704	01/19/2021	01/19/2026
DOL	DOL	****5924	WILLIAM G. PROPHY, LLC	WGP CONTRACTIN G, INC.	54 PENTAQUIT AVE BAYSHORE NY 11706	01/19/2021	01/19/2026

NYSDOL Bureau of Public Work Debarment List 08/30/2024

Article 8

DOL	DOL		WILLIAM SCRIVENS		4192 SIR ANDREW CIRCLE DOYELSTOWN PA 18902	07/18/2024	07/18/2029
DOL	DOL		XENOFON EFTHIMIADIS		29-10 38TH AVENUE LONG ISLAND CITY NY 11101	10/11/2023	10/11/2028

SECTION 01 08 00 - GENERAL COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings.
3. Commissioning reports.
4. Test equipment, instrumentation, and tools (including, but not limited to, proprietary test equipment, instrumentation, and tools) required to perform tests.
5. Use of test equipment, instrumentation, and tools for commissioning.
6. Construction checklist requirements, including, but not limited to, installation checks, startup, performance tests, and performance test demonstration.
7. Commissioning tests and commissioning test demonstration.
8. Adjusting, verifying, and documenting identified systems and assemblies.
9. Work to correct commissioning issues.
10. Work to repeat tests when equipment and systems fail acceptance criteria.

B. Related Requirements:

1. Section 01 33 00 "Submittal Procedures" for submittal procedures requirements for commissioning.
2. Section 01 77 00 "Closeout Procedures" for certificate of Construction Phase Commissioning Completion submittal requirements.
3. Section 01 78 23 "Operation and Maintenance Data" for preliminary operation and maintenance data submittal.
4. Section 23 08 00 "Commissioning of HVAC" for technical commissioning requirements for HVAC systems.
5. Section 26 08 00 "Commissioning of Electrical" for technical commissioning requirements for Electrical systems.
6. Individual Technical Specifications and Drawings: Equipment and systems design and installation, startup, field quality-control testing, and additional requirements indicated in the Contract Documents.

1.3 DEFINITIONS

- A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity, including, but not limited to, construction checklists, performance tests, performance test demonstrations, commissioning tests and commissioning test demonstrations.
- B. Basis-of-Design Document: A document prepared by Owner, Architect, or Commissioning Authority that records concepts, calculations, decisions, and product selections used to comply with Owner's Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.
- C. Commissioning Authority: An entity engaged by Owner, and identified in Section 011000 "Summary," to evaluate Commissioning-Process Work.
- D. Commissioning Plan: A document, prepared by Commissioning Authority, that outlines the organization, schedule, allocation of resources, and documentation requirements of commissioning.
- E. Commissioning: A quality-focused process for verifying and documenting that the facility and all of its systems and assemblies are planned, designed, installed, and tested to comply with Owner's Project Requirements. The requirements specified here are limited to the construction phase commissioning activities. The scope of commissioning is defined in Section 011200 "Multiple Contract Summary."
- F. Construction Phase Commissioning Completion: The stage of completion and acceptance of commissioning when resolution of deficient conditions and issues discovered during commissioning and retesting until acceptable results are obtained has been accomplished. Owner will establish in writing the date Construction Phase Commissioning Completion is achieved. See Section 017700 "Closeout Procedures" for certificate of Construction Phase Commissioning Completion submittal requirements.
 - 1. Commissioning is complete when the work specified in this Section and related Sections has been completed and accepted, including, but not limited to, the following:
 - a. Completion of tests and acceptance of test results.
 - b. Resolution of issues, as verified by retests performed and documented with acceptance of retest results.
 - c. Comply with requirements in Section 017900 "Demonstration and Training."
 - d. Completion and acceptance of submittals and reports.
- G. Owner's Project Requirements: A document written by Owner, Architect, or Commissioning Authority that details the functional requirements of a project and the expectations of how it will be used and operated, including Project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information.
- H. Owner's Witness: Commissioning Authority, Owner's Project Manager, or Architect-designated witness authorized to authenticate test demonstration data and to sign completed test data forms.

- I. "Systems," "Assemblies," "Subsystems," "Equipment," and "Components": Where these terms are used together or separately, they shall mean "as-built" systems, assemblies, subsystems, equipment, and components.
- J. Test: Performance tests, performance test demonstrations, commissioning tests, and commissioning test demonstrations.
- K. Sampling Procedures and Tables for Inspection by Attributes: As defined in ASQ Z1.4.

1.4 COMPENSATION

- A. Should Architect, Commissioning Authority, other Owner's witness, or Owner's staff perform additional services or incur additional expenses due to actions of Contractor listed below, compensate Owner for such additional services and expenses.
 - 1. Failure to provide timely notice of commissioning activities schedule changes.
 - 2. Failure to meet acceptance criteria for test demonstrations.
- B. Contractor shall compensate Owner for such additional services and expenses at the rate of \$175.00 per labor hour plus the current per mile rate for personnel travelling plus per diem allowances for meals and lodging according to current U.S. General Services Administration (GSA) Per Diem Rates.

1.5 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s):
 - 1. Commissioning Coordinator: A person or entity employed by Contractor to manage, schedule, and coordinate commissioning.
 - 2. Project superintendent and other employees that Contractor may deem appropriate for a particular portion of the commissioning.
 - 3. Subcontractors, installers, suppliers, and specialists that Contractor may deem appropriate for a particular portion of the commissioning.
 - 4. Appointed team members shall have the authority to act on behalf of the entity they represent.
- B. Members Appointed by Owner:
 - 1. Commissioning Authority, plus consultants that Commissioning Authority may deem appropriate for a particular portion of the commissioning.
 - 2. Owner representative(s), facility operations and maintenance personnel, plus other employees, separate contractors, and consultants that Owner may deem appropriate for a particular portion of the commissioning.
 - 3. Architect / Engineer, plus employees and consultants that Architect may deem appropriate for a particular portion of the commissioning.

1.6 SUBMITTALS

- A. Comply with requirements in Section 01 33 00 "Submittal Procedures" for submittal procedures general requirements for commissioning.
- B. Commissioning Plan Information:
 - 1. List of Contractor-appointed commissioning team members to include specific personnel and subcontractors to the performance of the various commissioning requirements.
 - 2. Schedule of commissioning activities, integrated with the construction schedule. Comply with requirements in Section 01 32 00 "Construction Progress Documentation" for construction schedule general requirements for commissioning.
 - 3. Contractor personnel and subcontractors to participate in each test.
 - 4. List of instrumentation required for each test to include identification of parties that will provide instrumentation for each test.
- C. Commissioning Coordinator Letter of Authority:
 - 1. Within 10 days after approval of Commissioning Coordinator qualifications, submit a letter of authority for Commissioning Coordinator, signed by a principal of Contractor's firm. Letter shall authorize Commissioning Coordinator to do the following:
 - a. Make inspections required for commissioning.
 - b. Coordinate, schedule, and manage commissioning of Contractor, subcontractors, and suppliers.
 - c. Obtain documentation required for commissioning from Contractor, subcontractors, and suppliers.
 - d. Report issues, delayed resolution of issues, schedule conflicts, and lack of cooperation or expertise on the part of members of the commissioning team.
- D. Commissioning Coordinator Qualification Data: For entity coordinating Contractor's commissioning activities to demonstrate their capabilities and experience.
 - 1. Experienced: When used with an entity or individual, "experienced" 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.
- E. Commissioning schedule.
- F. Two-week look-ahead schedules.

G. List test instrumentation, equipment, and monitoring devices. Include the following information:

1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
2. Brief description of intended use.
3. Calibration record showing the following:
 - a. Calibration agency, including name and contact information.
 - b. Last date of calibration.
 - c. Range of values for which calibration is valid.
 - d. Certification of accuracy.
 - e. N.I.S.T. traceability certification for calibration equipment.
 - f. Due date of the next calibration.

H. Construction Checklists:

1. Material checks.
2. Installation checks.
3. Startup procedures, where required.

I. Test Reports:

1. Pre-Startup Report: Prior to start up of equipment or a system, submit signed, completed construction checklists.
2. Test Data Reports: At the end of each day in which tests are conducted, submit test data for tests performed.
3. Commissioning Issues Reports: Daily, at the end of each day in which tests are conducted, submit commissioning issue reports for tests for which acceptable results were not achieved.
4. Weekly Progress Report: Weekly, at the end of each week in which tests are conducted, submit a progress report.
5. Data Trend Logs: Submit data trend logs at the end of the trend log period.
6. System Alarm Logs: Daily, at the start of days following a day in which tests were performed, submit print-out of log of alarms that occurred since the last log was printed.

1.7 CLOSEOUT SUBMITTALS

A. Commissioning Report:

1. At Construction Phase Commissioning Completion, include the following:
 - a. Pre-startup reports.

- b. Approved test procedures.
 - c. Test data forms, completed and signed.
 - d. Progress reports.
 - e. Commissioning issues report log.
 - f. Commissioning issues reports showing resolution of issues.
 - g. Correspondence or other documents related to resolution of issues.
 - h. Other reports required by commissioning.
 - i. List unresolved issues and reasons they remain unresolved and should be exempted from the requirements for Construction Phase Commissioning Completion.
 - j. Report shall include commissioning work of Contractor.
- B. Request for Certificate of Construction Phase Commissioning Completion.
 - C. Operation and Maintenance Data: For proprietary test equipment, instrumentation, and tools to include in operation and maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Commissioning Coordinator Qualifications:
 - 1. Certification of commissioning process expertise. The following certifications are acceptable upon receipt of information demonstrating that certification is current and in good standing. Owner reserves the right to accept or reject other certifications as evidence of qualification.
 - a. Certified Commissioning Professional, by Building Commissioning Association.
 - b. Certified Building Commissioning Professional, by Association of Energy Engineers.
 - c. Existing Building Commissioning Professional, by Association of Energy Engineers.
 - d. Commissioning Process Management Professional, by American Society of Heating, Refrigerating and Air-Conditioning Engineers.
 - e. Accredited Commissioning Process Authority Professional, by University of Wisconsin.
 - f. Accredited Commissioning Process Manager, by University of Wisconsin.
 - g. Accredited Green Commissioning Process Provider, by University of Wisconsin.
 - 2. Absent one of the certifications above, provide documented experience on at least three projects of similar scope and complexity commissioning systems of similar complexity to those contained in these documents. Provide written references from the lead Commissioning Authority of each project attesting to applicant experience, responsibilities, and proven capabilities in regards to commissioning being equal to those required to gain one of the listed certifications. Each reference must be certified in accordance with the above requirements.
- B. Calibration Agency Qualifications: Certified by The American Association of Laboratory Accreditation that the calibration agency complies with minimum requirements of ISO/IEC 17025.

1.9 COMMISSIONING AUTHORITY'S RESPONSIBILITIES

- A. Commissioning Authority Responsibilities: Comply with requirements in Section 011200 "Summary of Multiple Contracts."

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Test equipment and instrumentation required to perform the commissioning shall remain the property of Contractor unless otherwise indicated.
- B. Test equipment and instrumentation required to perform commissioning shall comply with the following criteria:
 - 1. Be manufactured for the purpose of testing and measuring tests for which they are being used and have an accuracy to test and measure system performance within the tolerances required to determine acceptable performance.
 - 2. Calibrated and certified.
 - a. Calibration performed and documented by a qualified calibration agency according to national standards applicable to the tools and instrumentation being calibrated. Calibration shall be current according to national standards or within test equipment and instrumentation manufacturer's recommended intervals, whichever is more frequent, but not less than within six months of initial use on Project. Calibration tags permanently affixed.
 - b. Repair and recalibrate test equipment and instrumentation if dismantled, dropped, or damaged since last calibrated.
 - 3. Maintain test equipment and instrumentation.
 - 4. Use test equipment and instrumentation only for testing or monitoring Work for which they are designed.

2.2 PROPRIETARY TEST EQUIPMENT, INSTRUMENTATION, AND TOOLS

- A. Proprietary test equipment, instrumentation, and tools are those manufactured or prescribed by tested equipment manufacturer and required for work on its equipment as a condition of equipment warranty, or as otherwise required to service, repair, adjust, calibrate, or perform work on its equipment.
 - 1. Identify proprietary test equipment, instrumentation, and tools required in the test equipment identification list submittal.
 - 2. Proprietary test equipment, instrumentation, and tools shall become the property of Owner at Substantial Completion.

2.3 REPORT FORMAT AND ORGANIZATION

A. General Format and Organization:

1. Record report on compact disk.
2. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.

B. Commissioning Report:

1. Include a table of contents and an index to each test.
2. Include major tabs for each Specification Section.
3. Include minor tabs for each test.
4. Within each minor tab, include the following:
 - a. Test specification.
 - b. Pre-startup reports.
 - c. Approved test procedures.
 - d. Test data forms, completed and signed.
 - e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within the minor tab, in reverse chronological order (most recent on top).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Review preliminary construction checklists and preliminary test procedures and data forms.

3.2 CONSTRUCTION CHECKLISTS

- A. Construction checklists cannot modify or conflict with the Contract Documents.
- B. Create construction checklists based on actual systems and equipment to be included in Project.
- C. Material Checks: Compare specified characteristics and approved submittals with materials as received. Include factory tests and other evaluations, adjustments, and tests performed prior to shipment, if applicable.

1. Services connection requirements, including configuration, size, location, and other pertinent characteristics.
 2. Included optional features.
 3. Delivery Receipt Check: Inspect and record physical condition of materials and equipment on delivery to Project site, including agreement with approved submittals, cleanliness and lack of damage.
- D. Installation Checklists: must in general document that equipment and systems are installed and started in accordance with the contract document requirements. See attachment #1 for sample checklists for a small group of representative equipment. Develop checklists in similar format with line items required designed to insure proper installation by installers:
1. Location according to Drawings and approved Shop Drawings.
 2. Configuration.
 3. Compliance with manufacturers' written installation instructions.
 4. Attachment to structure.
 5. Access clearance to allow for maintenance, service, repair, removal, and replacement without the need to disassemble or remove other equipment or building elements. Access coordinated with other building elements and equipment, including, but not limited to, ceiling and wall access panels, in a manner consistent with OSHA fall-protection regulations and safe work practices.
 6. Utility connections are of the correct characteristics, as applicable.
 7. Correct labeling and identification.
- E. Startup Checks: Verify readiness of equipment to be energized. Include manufacturer's standard startup procedures and forms.
- F. Startup: Perform and document initial operation of equipment to prove that it is installed properly and operates as intended according to manufacturer's standard startup procedures, minimum.
- G. Performance Tests:
1. Static Tests: As specified elsewhere, including, but not limited to, duct and pipe leakage tests, insulation-resistance tests, and water-penetration tests.
 2. Component Performance Tests: Tests evaluate the performance of an input or output of components under a full range of operating conditions.
 3. Equipment and Assembly Performance Tests: Test and evaluate performance of equipment and assemblies under a full range of operating conditions and loads.
 4. System Performance Tests: Test and evaluate performance of systems under a full range of operating conditions and loads.
 5. Intersystem Performance Tests: Test and evaluate the interface of different systems under a full range of operating conditions and loads.

- H. Deferred Construction Checklists: Obtain Owner approval of proposed deferral of construction checklists, including proposed schedule of completion of each deferred construction checklist, before submitting request for Certificate of Construction Phase Commissioning Completion. When approved, deferred construction checklists may be completed after date of Construction Phase Commissioning Completion. Include the following in request for Certificate of Construction Phase Commissioning Completion:
1. Identify deferred construction checklists by number and title.
 2. Provide a target schedule for completion of deferred construction checklists.
 3. Written approval of proposed deferred construction checklists, including approved schedule of completion of each deferred construction checklist.
- I. Delayed Construction Checklists: Obtain Owner approval of proposed delayed construction checklists, including proposed schedule of completion of each delayed construction checklist, before submitting request for Certificate of Construction Phase Commissioning Completion. When approved, delayed construction checklists may be completed after date of Construction Phase Commissioning Completion. Include the following in request for Certificate of Construction Phase Commissioning Completion:
1. Identify delayed construction checklist by construction checklist number and title.
 2. Provide a target schedule for completion of delayed construction checklists.
 3. Written approval of proposed delayed construction checklists, including approved schedule of completion of each delayed construction checklist.

3.3 GENERAL EXECUTION REQUIREMENTS

- A. Schedule and coordinate commissioning with the construction schedule.
- B. Perform activities identified in construction checklists, including tests, and document results of actions as construction proceeds.
- C. Perform test demonstrations for Owner's witness. Unless otherwise indicated in specific testing requirements, demonstrate tests for 100 percent of work to which the test applies.
- D. Report test data and commissioning issue resolutions.
- E. Schedule personnel to participate in and perform Commissioning-Process Work.
- F. Installing contractors' commissioning responsibilities include, but are not limited to, the following:
1. Operating the equipment and systems they install during tests.
 2. In addition, installing contractors may be required to assist in tests of equipment and systems with which their work interfaces.

3.4 COMMISSIONING COORDINATOR RESPONSIBILITIES

- A. Management and Coordination: Manage, schedule, and coordinate commissioning, including, but not limited to, the following:
1. Coordinate with subcontractors on their commissioning responsibilities and activities.
 2. Obtain, assemble, and submit commissioning documentation.
 3. Attend periodic on-site commissioning meetings. Comply with requirements in Section 01 31 00 "Project Management and Coordination."
 4. Develop and maintain the commissioning schedule. Integrate commissioning schedule into the construction schedule. Update schedule at specified intervals.
 5. Review and comment on preliminary test procedures and data forms.
 6. Report inconsistencies and issues in system operations.
 7. Verify that tests have been completed and results comply with acceptance criteria, and that equipment and systems are ready before scheduling test demonstrations.
 8. Direct and coordinate test demonstrations.
 9. Coordinate witnessing of test demonstrations by Owner's witness.
 10. Coordinate and manage training. Be present during training sessions to direct video recording, present training and direct the training presentations of others. Comply with requirements in Section 017900 "Demonstration and Training."
 11. Prepare and submit specified commissioning reports.
 12. Track commissioning issues until resolution and retesting is successfully completed.
 13. Retain original records of Commissioning-Process Work, organized as required for the commissioning report. Provide Owner's representative access to these records on request.
 14. Assemble and submit commissioning report.

3.5 COMMISSIONING TESTING

- A. Quality Control: Construction checklists, including tests, are quality-control tools designed to improve the functional quality of Project. Test demonstrations evaluate the effectiveness of Contractor's quality-control process.
- B. Owner's witness will be present to witness commissioning work requiring the signature of an owner's witness, including, but not limited to, test demonstrations. Owner's project manager will coordinate attendance by Owner's witness with Contractor's published commissioning schedule. Owner's witness will provide no labor or materials in the commissioning work. The only function of Owner's witness will be to observe and comment on the progress, completion, and results of commissioning.

C. Construction Checklists:

1. Complete construction checklists as Work is completed.
2. Distribute construction checklists to installers before they start work.
3. Installers:
 - a. Verify installation using approved construction checklists as Work proceeds.
 - b. Complete and sign construction checklists daily for work performed during the preceding day.
4. Provide Commissioning Authority access to construction checklists.

D. Installation Compliance Issues: Record as an installation compliance issue Work found to be incomplete, inaccessible, at variance with the Contract Documents, nonfunctional, or that does not comply with construction checklists. Record installation compliance issues on the construction checklist at the time they are identified. Record corrective action and how future Work should be modified before signing off the construction checklist.

E. Pre-Startup Audit: Prior to executing startup procedures, review completed installation checks to determine readiness for startup and operation. Report conditions, which, if left uncorrected, adversely impact the ability of systems or equipment to operate satisfactorily or to comply with acceptance criteria. Prepare pre-startup report for each system.

F. Test Procedures and Test Data Forms:

1. Test procedures shall define the step-by-step procedures to be used to execute tests and test demonstrations.
2. Test procedures shall be specific to the make, model, and application of the equipment and systems being tested.
3. Completed test data forms are the official records of the results of tests.
4. Commissioning Authority will provide to Contractor preliminary test procedures and test data forms for performance tests and commissioning tests after approval of Product Data, Shop Drawings, and preliminary operation and maintenance manual. Test procedures will in general be designed to demonstrate that operating characteristics conform to any or all required and / or approved performance characteristics.
5. Review preliminary test procedures and test data forms and provide comments within 14 days of receipt from Commissioning Authority. Review shall address the following:
 - a. Equipment protection and warranty issues, including, but not limited to, manufacturers' installation and startup recommendations, and operation and maintenance instructions.

- b. Applicability of the procedure to the specific software, equipment, and systems approved for installation.
 6. After Contractor has reviewed and commented on the preliminary test procedures and test data forms, Commissioning Authority will revise and reissue the approved revised test procedures and test data forms marked "Approved for Testing."
 7. Use only approved test procedures and test data forms marked "Approved for Testing" to perform and document tests and test demonstrations.
- G. Performance of Tests:
1. The sampling rate for tests is 100 percent. The sampling rate for test demonstrations is 100 percent unless otherwise indicated.
 2. Perform and complete each step of the approved test procedures in the order listed.
 3. Record data observed during performance of tests on approved data forms at the time of test performance and when the results are observed.
 4. Record test results that are not within the range of acceptable results on commissioning issue report forms in addition to recording the results on approved test procedures and data forms according to the "Commissioning Compliance Issues" Paragraph in this Article.
 5. On completion of a test, sign the completed test procedure and data form. Tests for which test procedures and data forms are incomplete, not signed, or which indicate performance that does not comply with acceptance criteria will be rejected. Tests for which test procedures and data forms are rejected shall be repeated and results resubmitted.
- H. Performance of Test Demonstration:
1. Perform test demonstrations on a sample of tests after test data submittals are approved. The sampling rate for test demonstrations shall be 100 percent of components which are not typical of at least 10, and shall be 25% of components which are typical of at least 10, unless otherwise indicated in the individual test specification.
 2. Notify Owner's witness at least seven days in advance of each test demonstration.
 3. Perform and complete each step of the approved test procedures in the order listed.
 4. Record data observed during performance of test demonstrations on approved data forms at the time of demonstration and when the results are observed.
 5. Provide full access to Owner's witness to directly observe the performance of all aspects of system response during the test demonstration. On completion of a test demonstration, sign the completed data form and obtain signature of Owner's witness at the time of the test to authenticate the reported results.

6. Test demonstration data forms not signed by Contractor and Owner's witness at the time of the completion of the procedure will be rejected. Test demonstrations for which data forms are rejected shall be repeated and results shall be resubmitted.
 - a. Exception for Failure of Owner's Witness to Attend: Failure of Owner's witness to be present for agreed-on schedule of test demonstration shall not delay Contractor. If Owner's witness fails to attend a scheduled test, Contractor shall proceed with the scheduled test. On completion, Contractor shall sign the data form for Contractor and for Owner's witness, and shall note the absence of Owner's witness at the scheduled time and place.
7. False load test requirements are specified in related sections.
 - a. Where false load testing is specified, provide temporary equipment, power, controls, wiring, piping, valves, and other necessary equipment and connections required to apply the specified load to the system. False load system shall be capable of steady-state operation and modulation at the level of load specified. Equipment and systems permanently installed in this work shall not be used to create the false load without Architect's written approval.

I. Deferred Tests:

1. Deferred Tests List: Identify, in the request for Certificate of Construction Phase Commissioning Completion, proposed deferred tests or other tests approved for deferral until specified seasonal or other conditions are available. When approved, deferred tests may be completed after the date of Construction Phase Commissioning Completion. Identify proposed deferred tests in the request for Certificate of Construction Phase Commissioning Completion as follows:
 - a. Identify deferred tests by number and title.
 - b. Provide a target schedule for completion of deferred tests.
2. Schedule and coordinate deferred tests. Schedule deferred tests when specified conditions are available. Notify Architect and Commissioning Authority at least seven calendar days (minimum) in advance of tests.
3. Where deferred tests are specified, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule deferred tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

J. Delayed Tests:

1. Delayed Tests List: Identify, in the request for Certificate of Construction Phase Commissioning Completion, proposed delayed tests. Obtain Owner approval of proposed delayed tests, including proposed schedule of completion of each delayed test, before submitting request for Certificate of Construction Phase Commissioning Completion. Include the following in the request for Certificate of Construction Phase Commissioning Completion:

- a. Identify delayed tests by test number and title.
 - b. Written approval of proposed delayed tests, including approved schedule of completion of delayed tests.
2. Schedule and coordinate delayed tests. Schedule delayed tests when conditions that caused the delay have been rectified. Notify Architect and Commissioning Authority at least seven calendar days (minimum) in advance of tests.
3. Where delayed tests are approved, coordinate participation of necessary personnel and of Architect, Commissioning Authority, and Owner's witness. Schedule delayed tests to minimize occupant and facility impact. Obtain Architect's approval of the proposed schedule.

K. Commissioning Compliance Issues:

1. Test results that are not within the range of acceptable results are commissioning compliance issues.
2. Track and report commissioning compliance issues until resolution and retesting are successfully completed.
3. If a test demonstration fails, determine the cause of failure. Direct timely resolution of issue and then repeat the demonstration. If a test demonstration must be repeated due to failure caused by Contractor work or materials, reimburse Owner for billed costs for the participation in the repeated demonstration.
4. Test Results: If a test demonstration fails to meet the acceptance criteria, perform the following:
 - a. Complete a commissioning compliance issue report form promptly on discovery of test results that do not comply with acceptance criteria.
 - b. Submit commissioning compliance issue report form within 24 hours of the test.
 - c. Determine the cause of the failure.
 - d. Establish responsibility for corrective action if the failure is due to conditions found to be Contractor's responsibility.
5. Commissioning Compliance Issue Report: Provide a commissioning compliance issue report for each issue. Do not report multiple issues on the same commissioning compliance issue report.
 - a. Exception: If an entire class of devices is determined to exhibit the identical issue, they may be reported on a single commissioning compliance issue report. (For example, if all return-air damper actuators that are specified to fail to the open position are found to fail to the closed position, they may be reported on a single commissioning issue report. If a single commissioning issue report is used for multiple commissioning compliance issues, each device shall be identified in the report, and the total number of devices at issue shall be identified.
 - b. Complete and submit Part 1 of the commissioning compliance issue report immediately when the condition is observed.

- c. Record the commissioning compliance issue report number and describe the deficient condition on the data form.
 - d. Resolve commissioning compliance issues promptly. Complete and submit Part 2 of the commissioning compliance issue report when issues are resolved.
- 6. Diagnose and correct failed test demonstrations as follows:
 - a. Perform diagnostic tests and activities required to determine the fundamental cause of issues observed.
 - b. Record each step of the diagnostic procedure prior to performing the procedure. Update written procedure as changes become necessary.
 - c. Record the results of each step of the diagnostic procedure.
 - d. Record the conclusion of the diagnostic procedure on the fundamental cause of the issue.
 - e. Determine and record corrective measures.
 - f. Include diagnosis of fundamental cause of issues in commissioning compliance issue report.
- 7. Retest:
 - a. Schedule and repeat the complete test procedure for each test demonstration for which acceptable results are not achieved. Obtain signature of Owner's witness on retest data forms. Repeat test demonstration until acceptable results are achieved. Except for issues that are determined to result from design errors or omissions, or other conditions beyond Contractor's responsibility, compensate Owner for direct costs incurred as the result of repeated test demonstrations to achieve acceptable results.
 - b. For each repeated test demonstration, submit a new test data form, marked "Retest."
- 8. Do not correct commissioning compliance issues during test demonstrations.
 - a. Exceptions will be allowed if the cause of the issue is obvious and resolution can be completed in less than five minutes. If corrections are made under this exception, note the deficient conditions on the test data form and issue a commissioning compliance issue report. A new test data form, marked "Retest," shall be initiated after the resolution has been completed.

3.6 COMMISSIONING MEETINGS

- A. Commissioning Authority will schedule and conduct commissioning meetings. Comply with requirements in Section 013100 "Project Management and Coordination."

3.7 SEQUENCING

- A. Sequencing of Commissioning Verification Activities: For a particular material, item of equipment, assembly, or system, perform the following in the order listed unless otherwise indicated:
 - 1. Construction Checklists:
 - a. Material checks.
 - b. Installation checks.
 - c. Start up, as appropriate. Some startup may depend on component performance. Such startup may follow component performance tests on which the startup depends.
 - d. Performance Tests:
 - 1) Static tests, as appropriate.
 - 2) Component performance tests. Some component performance tests may depend on completion of startup. Such component performance tests may follow startup.
 - 3) Equipment and assembly performance tests.
 - 4) System performance tests.
 - 5) Intersystem performance tests.
 - 2. Commissioning tests.
- B. Before performing commissioning tests, verify that materials, equipment, assemblies, and systems are delivered, installed, started, and adjusted to perform according to construction checklists.
- C. Verify readiness of materials, equipment, assemblies, and systems by performing tests prior to performing test demonstrations. Notify Architect if acceptable results cannot be achieved due to conditions beyond Contractor's control or responsibility.
- D. Commence tests as soon as installation checks for materials, equipment, assemblies, or systems are satisfactorily completed. Tests of a particular system may proceed prior to completion of other systems, provided the incomplete work does not interfere with successful execution of test.

3.8 SCHEDULING

- A. Commence commissioning as early in the construction period as possible.
- B. Commissioning Schedule: Integrate commissioning into Contractor's construction schedule. See Section 01 32 00 "Construction Progress Documentation."

1. Include detailed commissioning activities in monthly updated Contractor's construction schedule and short interval schedule submittals.
2. Schedule the start date and duration for the following commissioning activities:
 - a. Submittals.
 - b. Preliminary operation and maintenance manual submittals.
 - c. Installation checks.
 - d. Startup, where required.
 - e. Performance tests.
 - f. Performance test demonstrations.
 - g. Commissioning tests.
 - h. Commissioning test demonstrations.
3. Schedule shall include a line item for each installation check, startup, and test activity specific to the equipment or systems involved.
4. Determine milestones and prerequisites for commissioning. Show commissioning milestones, prerequisites, and dependencies in monthly updated critical-path-method construction schedule and short interval schedule submittals.

C. Two-Week Look-Ahead Commissioning Schedule:

1. Two weeks prior to the beginning of tests, submit a detailed two-week look-ahead schedule. Thereafter, submit updated two-week look-ahead schedules weekly for the duration of commissioning.
2. Two-week look-ahead schedules shall identify the date, time, beginning location, Contractor personnel required, and anticipated duration for each startup or test activity.
3. Use two-week look-ahead schedules to notify and coordinate participation of Owner's witnesses.

D. Owner's Witness Coordination:

1. Coordinate Owner's witness participation via Architect.
2. Notify Architect of commissioning schedule changes at least two work days in advance for activities requiring the participation of Owner's witness.

3.9 COMMISSIONING REPORTS

A. Test Reports:

1. Pre-startup reports include observations of the conditions of installation, organized into the following sections:
 - a. Equipment Model Verification: Compare contract requirements, approved submittals, and provided equipment. Note inconsistencies.

- b. Preinstallation Physical Condition Checks: Observe physical condition of equipment prior to installation. Note conditions including, but not limited to, physical damage, corrosion, water damage, or other contamination or dirt.
 - c. Preinstallation Component Verification Checks: Verify components supplied with the equipment, preinstalled or field installed, are correctly installed and functional. Verify external components required for proper operation of equipment correctly installed and functional. Note missing, improperly configured, improperly installed, or nonfunctional components.
 - d. Summary of Installation Compliance Issues and Corrective Actions: Identify installation compliance issues and the corrective actions for each. Verify that issues noted have been corrected.
 - e. Evaluation of System Readiness for Startup: For each item of equipment for each system for which startup is anticipated, document in summary form acceptable to Owner completion of equipment model verification, preinstallation physical condition checks, preinstallation component verification checks, and completion of corrective actions for installation compliance issues.
2. Test data reports include the following:
- a. "As-tested" system configuration. Complete record of conditions under which the test was performed, including, but not limited to, the status of equipment, systems, and assemblies; temporary adjustments and settings; and ambient conditions.
 - b. Data and observations, including, but not limited to, data trend logs, recorded during the tests.
 - c. Signatures of individuals performing and witnessing tests.
 - d. Data trend logs accumulated overnight from the previous day of testing.
3. Commissioning Compliance Issues Reports: Report as commissioning compliance issues results of tests and test demonstrations that do not comply with acceptance criteria. Report only one issue per commissioning compliance issue report. Use sequentially numbered facsimiles of commissioning compliance issue report form included in this Section, or other form approved by Owner. Distribute commissioning compliance issue reports to parties responsible for taking corrective action. Identify the following:
- a. Commissioning compliance issue report number. Assign unique, sequential numbers to individual commissioning compliance issue reports when they are created, to be used for tracking.
 - b. Action distribution list.
 - c. Report date.
 - d. Test number and description.
 - e. Equipment identification and location.

- f. Briefly describe observations about the performance associated with failure to achieve acceptable results. Identify the cause of failure if apparent.
 - g. Diagnostic procedure or plan to determine the cause (include in initial submittal).
 - h. Diagnosis of fundamental cause of issues as specified below (include in resubmittal).
 - i. Fundamental cause of unacceptable performance as determined by diagnostic tests and activities.
 - j. When issues have been resolved, update and resubmit the commissioning issue report forms by completing Part 2. Identify resolution taken and the dates and initials of the persons making the entries.
 - k. Schedule for retesting.
4. Weekly progress reports include information for tests conducted since the preceding report and the following:
 - a. Completed data forms.
 - b. Equipment or system tested, including test number, system or equipment tag number and location, and notation about the apparent acceptability of results.
 - c. Activities scheduled but not conducted per schedule.
 - d. Commissioning compliance issue report log.
 - e. Schedule changes for remaining Commissioning-Process Work, if any.
 5. Data trend logs shall be initiated and running prior to the time scheduled for the test demonstration.
 - a. Trend log data format shall be multiple data series graphs. Where multiple data series are trend logged concurrently, present the data on a common horizontal time axis. Individual data series may be presented on a segmented vertical axis to avoid interference of one data series with another, and to accommodate different axis scale values. Graphs shall be sufficiently clear to interpret data within the accuracy required by the acceptance criteria.
 - b. Attach to the data form printed trend log data collected during the test or test demonstration.
 - c. Record, print out, and attach to the data form operator activity during the time the trend log is running. During the time the trend log is running, operator intervention not directed by the test procedure invalidates the test results.
 6. System Alarm Logs: Record and print out a log of alarms that occurred since the last log was printed. Evaluate alarms to determine if the previous day's work resulted in any conditions that are not considered "normal operation."

- a. Conditions that are not considered "normal operation" shall be reported on a commissioning issue report attached to the alarm log. Resolve as necessary. The intent of this requirement is to discover control system points or sequences left in manual or disabled conditions, equipment left disconnected, set points left with abnormal values, or similar conditions that may have resulted from failure to fully restore systems to normal, automatic control after test completion.

3.10 CERTIFICATE OF CONSTRUCTION PHASE COMMISSIONING COMPLETION

- A. When Contractor considers that construction phase commissioning, or a portion thereof which Owner agrees to accept separately, is complete, Contractor shall prepare and submit to Owner and Commissioning Authority through Architect a comprehensive list of items to be completed or corrected. Failure to include an item on such list does not alter Contractor's responsibility to compete commissioning.
- B. On receipt of Contractor's list, Commissioning Authority will make an inspection to determine whether the construction phase commissioning or designated portion thereof is complete. If Commissioning Authority's inspection discloses items, whether or not included on Contractor's list, which are not sufficiently complete as defined in "Construction Phase Commissioning Completion" Paragraph in the "Definitions" Article, Contractor shall, before issuance of the Certificate of Construction Phase Completion, complete or correct such items on notification by Commissioning Authority. In such case, Contractor shall then submit a request for another inspection by Commissioning Authority to determine construction phase commissioning completion.
- C. Contractor shall promptly correct deficient conditions and issues discovered during commissioning. Costs of correcting such deficient conditions and issues, including additional testing and inspections, the cost of uncovering and replacement, and compensation for Architect's and Commissioning Authority's services and expenses made necessary thereby, shall be at Contractor's expense.
- D. When construction phase commissioning or designated portion is complete, Commissioning Authority will prepare a Certificate of Construction Phase Commissioning that shall establish the date of completion of construction phase commissioning. Certificate of Construction Phase Commissioning Completion shall be submitted prior to requesting inspection for determining date of Substantial Completion.

END OF SECTION 01 08 00

SECTION 01 12 00 - MULTIPLE CONTRACT PROJECT SUMMARY-PROJECT SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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. Construction schedule.
 - 4. Requirements and assignments for each Contract.
 - 5. Owner-furnished products.
 - 6. Access to site.
 - 7. Coordination with occupants.
 - 8. Work restrictions.
- B. Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.
- C. Each Contractor is responsible to review all Drawings and Specifications for every contract to gain a complete understanding and knowledge of the entire Project, to determine how the work of each contract is to interface with every other contract.

1.3 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, the condition at which roofing is insulated and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction; and all exterior joints are sealed.

1.4 PROJECT INFORMATION

- A. Project Identification: Lakeland CSD – 2023 Capital Project, Phase 1
 - 1. Project Location:
 - a. Walter Panas High School
300 Croton Avenue, Cortlandt Manor, New York 10567
 - b. Lakeland High School
1349 East Main Street, Shrub Oak, New York 10588

- c. Lakeland-Copper Beech Middle School
3401 Old Yorktown Road, Route 132, Yorktown Heights, New York 10598
 - B. Owner: Board of Education of Lakeland Central School District.
 - 1. Address: 1086 East Main Street, Shrub Oak, New York 10588
 - C. Architect: Tetra Tech Engineers, Architects & Landscape Architects, P.C., d/b/a Tetra Tech Architects & Engineers.
 - 1. Address: Cornell Business & Technology Park, 10 Brown Road, Ithaca, New York 14850
 - D. Other Consultants: The Owner has retained the following who have prepared designated portions of the Contract Documents:
 - 1. Hazardous Materials Abatement: Langan Engineering, Environmental, Surveying, Landscape Architecture and Geology D.P.C..
Address: One North Broadway, 9th Floor, White Plains, New York 10601
 - E. Commissioning Authority (CxA): To Be Determined
 - 1. Address: To Be Determined
 - 2. Commissioning Authority has been engaged for this Project to provide commissioning services, according to provisions of Division 01 Section "General Commissioning Requirements."
 - F. Construction Manager: Triton Construction, Inc
 - 1. Address: 1279 NY-300, 1st Floor, Newburgh, New York 12550
 - 2. Construction Manager has been engaged for this Project to serve as an advisor to Owner and to provide assistance in administering the Contract for Construction between Owner and each Contractor, according to a separate contract between Owner and Construction Manager.
 - G. Building Code in Effect for Project: New York State Uniform Fire Prevention and Building Code and the Energy Conservation Construction Code of New York State.
 - 1. Comply with the following: Building standards of the New York State Education Department.
- 1.5 WORK COVERED BY CONTRACT DOCUMENTS
- A. The Work of the Project is defined by the Contract Documents and consists of the following:
 - 1. Walter Panas High School:
 - 1. Reconstruction of Library / Media Center
 - 2. Reconstruction of Select Roof Areas
 - 3. Reconstruction of Mechanical System

2. Lakeland High School:
 1. Reconstruction of Library / Media Center
 2. Reconstruction of Select Roof Areas
 3. Reconstruction of Select Auditorium Areas
3. Lakeland-Copper Beech Middle School
 1. Site Reconstruction
 2. Replacement of Existing Stand by Generator
 3. Reconstruction of Library / Media Center
 4. Reconstruction of Select Science Classrooms
 5. Reconstruction of Family and Consumer Sciences Classrooms

B. Type of Contract:

1. Project will be constructed under coordinated, generally concurrent multiple contracts. Contracts for this Project include the following:
 - a. General Contract (GC-1)
 1. Lakeland High School
 2. Walter Panas High School
 - b. General Contract (GC-2)
 1. Lakeland-Copper Beech Middle School
 - c. Mechanical Contract (MC-1)
 1. Lakeland High School
 2. Walter Panas High School
 3. Lakeland-Copper Beech Middle School
 - d. Electrical Contract (EC-1)
 1. Lakeland High School
 2. Walter Panas High School
 3. Lakeland-Copper Beech Middle School
 - e. Plumbing Contract (PC-1)
 1. Lakeland High School
 2. Walter Panas High School
 3. Lakeland-Copper Beech Middle School

- C. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.6 CONSTRUCTION SCHEDULE

A. The Work shall be conducted in accordance with the following schedule:

1. General Contract (GC-1):

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities):
 - 1. Reconstruction of Library / Media Center: January 1, 2025.
 - 2. Reconstruction of select roof areas: June 26, 2025.
 - 3. Reconstruction of Lakeland High School Auditorium: June 26, 2025.
- c. Submittals: Provide all submittals within 30 days after award of contract.
- d. Substantial Completion date: August 29, 2025.
- e. Final Completion date: 30 days after Substantial Completion.

2. General Contract (GC-2):

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities):
 - 1. Reconstruction of Library / Media Center: January 1, 2025.
 - 2. Reconstruction of select science classrooms: June 26, 2025.
 - 3. Reconstruction of family and consumer science classrooms: June 26, 2025.
 - 4. Site reconstruction: June 26, 2025.
- c. Submittals: Provide all submittals within 30 days after award of contract.
- d. Substantial Completion date: August 29, 2025.
- e. Final Completion date: 30 days after Substantial Completion.

3. Mechanical Contract (MC-1):

- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
- b. Commencement of Construction (On-Site Activities):
 - 1. Reconstruction of Library / Media Center: January 1, 2025.
 - 2. Reconstruction of select roof areas: June 26, 2025.
 - 3. Reconstruction of select science classrooms: June 26, 2025.
 - 4. Reconstruction of family and consumer science classrooms: June 26, 2025.
- c. Submittals: Provide all submittals within 30 days after award of contract.

- d. Substantial Completion date: August 29, 2025.
 - e. Final Completion date: 30 days after Substantial Completion.
4. Electrical Contract (EC-1):
- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
 - b. Commencement of Construction (On-Site Activities):
 - 1. Reconstruction of Library / Media Center: January 1, 2025.
 - 2. Reconstruction of select roof areas: June 26, 2025.
 - 3. Reconstruction of select science classrooms: June 26, 2025.
 - 4. Reconstruction of family and consumer science classrooms: June 26, 2025.
 - c. Submittals: Provide all submittals within 30 days after award of contract.
 - d. Substantial Completion date: August 29, 2025.
 - e. Final Completion date: 30 days after Substantial Completion.
5. Plumbing Contract (PC-1):
- a. Commencement of Construction (Off-Site Activities): Immediately following Contract Award.
 - b. Commencement of Construction (On-Site Activities):
 - 1. Reconstruction of Library / Media Center: January 1, 2025.
 - 2. Reconstruction of select science classrooms: June 26, 2025.
 - 3. Reconstruction of family and consumer science classrooms: June 26, 2025.
 - c. Submittals: Provide all submittals within 30 days after award of contract.
 - d. Substantial Completion date: August 29, 2025.
 - e. Final Completion date: 30 days after Substantial Completion.

1.7 REQUIREMENTS FOR EACH CONTRACT

A. Included in Each Contract:

- 1. In addition to specific responsibilities indicated in this Section, each contract is responsible to provide the following for its own work:
 - a. Construction layout.
 - b. Sleeves.
 - c. Anchor bolts.
 - d. Hangers and supports for piping, equipment, and systems.
 - e. Equipment pads.

- f. Cutting and patching.
 - g. Through-penetration firestopping.
- 2. Provide materials and comply with installation requirements specified in Sections other than Contractor's own designated Specification Sections for above-listed items, as applicable.
- B. Substitutions: Each contractor shall cooperate with other contractors involved to coordinate approved substitutions with remainder of the work.
- C. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section, each contractor is responsible for the following:
 - 1. Installation, operation, maintenance, and removal of each temporary facility necessary for its own normal construction activity, and costs and use charges associated with each facility, except as otherwise provided for in this Section.
 - 2. Temporary utilities, as follows:
 - a. Drinking water for its own construction personnel.
 - b. Provisions for dust, fume and odor control for its own activities.
 - c. Supplemental heating, cooling, and ventilation necessary exclusively for its own activities.
 - d. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting necessary exclusively for its own activities.
 - 3. Support facilities, as follows:
 - a. Its own field office, complete with necessary furniture, and telephone service.
 - b. Its own storage sheds.
 - c. Traffic controls for its own construction activities.
 - d. Dewatering facilities and drains for its own construction activities.
 - e. Waste disposal facilities for collection and legal disposal of its own hazardous waste materials.
 - f. Shoring and bracing for its own construction activities.
 - g. Staging and scaffolding for its own construction activities.
 - h. Lifts and hoists for its own construction activities.
 - 4. Security and protection facilities, as follows:
 - a. Environmental protection for its own construction activities.
 - b. Temporary erosion and sedimentation control for its own construction activities.
 - c. Security enclosure and lockup of its own tools, materials, and equipment.
 - d. Temporary enclosures for its own construction activities.
 - e. Temporary fire protection for its own construction activities.
 - 5. Moisture and mold control.
 - 6. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.

D. Cleaning and Protection: Each contractor is responsible for the following:

1. Progress cleaning of work areas affected by its operations on a daily basis.
2. Protection of its own installed construction.
3. Final cleaning of its work and of work areas affected by its operations.

1.8 CONTRACT ASSIGNMENTS

A. Contract Assignments: In addition to specific responsibilities indicated in this Section, the contracts noted below are assigned certain responsibilities, as follows:

1. Excavation (including support and protection), shall be the work of the General Contract, unless required solely for the Work of another contract.
 - a. Excavation for plumbing work within the building footprint and to a distance five feet outside the building footprint shall be the work of the Plumbing Contract.
 - b. Excavation for natural-gas service shall be the work of the Plumbing Contract.
 - c. Excavation for mechanical work shall be the work of the Mechanical Contract.
 - d. Excavation for electrical work shall be the work of the Electrical Contract.
2. Blocking (including roof blocking) for the work of each contract shall be the work of the General Contract. Each contract is responsible for identifying blocking sizes and locations for its own work and advising of the General Contractor of such, in writing, in a timely manner.
3. Openings in walls, floors and roofs:
 - a. In new surfaces: Providing openings, including lintels and structural framing shall be the work of the General Contract. Each contract is responsible for identifying opening sizes and locations for its own work and advising the General Contractor of such, in writing, in a timely manner.
 - b. In existing surfaces: Providing openings, including lintels and structural framing shall be the work of each contract for its own work.
 - c. Size lintels and structural framing for openings in accordance with the information on the Drawings.
 - d. Provide openings by personnel experienced in work similar to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
4. Furnishing of access panels for the work of each contract shall be the work of each contract for its own work.
 - a. In new surfaces: Installing access panels shall be the work of the General Contract.
 - b. In existing surfaces: Installing access panels shall be the work of each contract for its own work.

5. Furnishing roof-mounted equipment curbs for the work of each contract shall be the work of each contract for its own work.
 - a. Installing roof-mounted equipment curbs (including flashing and sealing) shall be the work of the General Contract.
6. Furnishing vandal-resistant roof vent caps and roof drain clamping ring, adjustable extensions and dome strainers, shall be the work of the Plumbing Contract.
 - a. Installing vandal-resistant roof vent caps and roof drain clamping ring, adjustable extensions and dome strainers shall be the work of the General Contract.
7. Painting for the work of each contract shall be the work of the General Contract, except as follows:
 - a. Identification painting (such as for piping and equipment) for the work of each contract shall be the work of each contract for its own work.
8. Science Rooms:
 - a. Providing casework as detailed on Contract Documents and approved shop drawings shall be the work of the General Contractor.
 - 1) Providing field alterations/cutouts in casework and coordinating with appropriate contractors shall be the work of the General Contractor.
 - 2) Providing exposed end and finish panels shall be the work of the General Contractor.
 - 3) Ensuring field alterations/cutouts for equipment are clean and completed with finished end and trim pieces shall be the work of the General Contractor.
 - 4) Ensuring filler panels, grilles, louvers and removable panels are correctly installed and are as specified shall be the work of the General Contractor.
 - 5) Coordinating removable sink and unit ventilator/fin tube radiation wall unit panels shall be the work of the General Contractor.
 - 6) Providing linear grilles for casework shall be the work of the General Contractor.
 - 7) Providing keys for cabinets as per specification requirements and making sure all keys work in units shall be the work of the General Contractor.
 - 8) Providing accessory labels, file drawer inserts, etc. and verifying they are provided as detailed shall be the work of the General Contractor.
 - 9) Verifying drawer fronts, doors, etc. are in correct alignment and close/latch correctly shall be the work of the General Contractor.
 - b. Providing epoxy tops (with or without drip edge details) shall be the work of the General Contractor.
 - 1) Providing cutouts in countertops and coordinating with appropriate contractors shall be the work of the General Contractor.
 - 2) Providing epoxy resin sinks in epoxy resin tops shall be the work of the General Contractor.

- a) Coordinating drain locations for accessible sinks with the General Contractor and verifying clearances for accessible knee space with sink drain pipes are correct and meet accessibility requirements shall be the work of the Plumbing Contractor.
 - b) Providing faucets, water supplies, waste outlets and plug, drains, traps and final plumbing connections at epoxy resin sinks shall be the work of the Plumbing Contractor.
 - c) Providing acid neutralization equipment shall be the work of the Plumbing Contractor.
- 3) Providing grommets as shown on Contract Documents shall be the work of the General Contractor.
- 4) Providing linear grilles for countertops shall be the work of the General Contractor.
- 5) Reviewing details for areas of required surface sealant (i.e., at laminate countertops) and providing the sealant shall be the work of the General Contractor.
- 6) Providing gas cocks shall be the work of the Plumbing Contractor.
- 9. Providing linear grilles for casework shall be the work of the General Contractor.
- 10. Furnishing mechanical louvers and grilles for exterior walls shall be the work of the Mechanical Contractor.
 - a. Installing louvers and grilles for exterior walls (including flashing and sealing) shall be the work of the General Contractor.
- 11. Furnishing motor starters for the work of each contract shall be the work of each contract for its own work.
 - a. Installing constant speed motor starters shall be the work of the Electrical Contractor.
 - b. Installing Variable Frequency Motor Controllers shall be the work of each contract for its own work.
- 12. Providing automatic door operators shall be the work of the General Contractor, including installing control wiring from activation device (push-plate switch) to operator.
 - a. Providing power to operator shall be the work of the Electrical Contractor.
- 13. Contractors' Preliminary Construction Schedule: At the Preconstruction Conference, the General Contractor shall submit a preliminary horizontal bar-chart-type construction schedule in accordance with Division 01 Section "Construction Progress Documentation". At the initial progress meeting, each contract shall submit a matching preliminary horizontal bar-chart schedule showing construction operations sequenced and coordinated with overall construction in accordance with Division 01 Section "Construction Progress Documentation".

- a. The schedules shall be mutually coordinated by the contractors, and the General Contractor shall perform the administrative task of producing a composite master schedule and distributing to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.
14. Contractors' Construction Schedules: At intervals provided in Division 01 Section "Construction Progress Documentation", each contract shall update its schedule, from which the General Contractor shall produce a composite master schedule.
 - a. The General Contractor shall distribute composite master schedules to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.
15. Provide work specified in Sections other than Contractor's own designated Specification Sections for above-listed items, as applicable.
- B. Field Engineering and Surveying: The General Contract is responsible for field engineering and surveying.
- C. Temporary HVAC: The General Contract is responsible for temporary HVAC before permanent enclosure of building is complete and all associated costs. The General Contract is responsible for temporary HVAC after permanent enclosure of building is complete, but Owner will pay utility-use charges.
 1. Use of permanent systems for temporary HVAC is prohibited.
- D. Temporary Ventilation: The General Contract is responsible for temporary ventilation before permanent enclosure of building is complete and all associated costs. The General Contract is responsible for temporary ventilation after permanent enclosure of building is complete, but Owner will pay utility-use charges.
 1. Use of permanent systems for temporary ventilation is prohibited.
- E. Waste Disposal and Recycling Facilities: For debris not classified as hazardous waste, the General Contract is responsible for providing waste-collection and recycling containers, including all costs for hauling, tipping fees, and placement on site.
 1. Each contractor is responsible for daily collection of its own waste materials and disposal into the waste-collection containers that are provided by the General Contract.
 2. Each contractor is responsible for daily collection of its own recyclable waste and disposal into recycling containers or bins, as well as daily inspection of containers or bins for contamination and removal of contaminated materials.
- F. Equipment Coordination: Refer to "Connection Schedule" at the end of this Section for each contract's responsibilities.

1.9 GENERAL CONTRACT (GC-1) REQUIREMENTS

- A. Unless noted otherwise, Work in the General Contract includes, but is not limited to, that shown on the following Drawings:
1. Title Sheets.
 2. Symbols and Abbreviations (G) Drawings.
 3. Code Compliance (G) Drawings.
 4. General Information (G) Drawings.
 5. Phasing (G) Drawings.
 6. Hazardous Materials (H) Drawings.
 7. Structural (S) Drawings.
 8. Architectural (A) Drawings.
- B. Unless noted otherwise, Work in the General Contract includes, but is not limited to, that covered by the following Specifications:
1. Division 01 (General Requirements) Specification sections.
 2. Division 02 (Existing Conditions) Specification sections.
 3. Division 03 (Concrete) Specification sections.
 4. Division 04 (Masonry) Specification sections.
 5. Division 05 (Metals) Specification sections.
 6. Division 06 (Wood, Plastics, and Composites) Specification sections.
 7. Division 07 (Thermal and Moisture Protection) Specification sections.
 8. Division 08 (Openings) Specification sections.
 9. Division 09 (Finishes) Specification sections.
 10. Division 10 (Specialties) Specification sections.
 11. Division 12 (Furnishings) Specification sections.
- C. Temporary facilities and controls in the General Contract include, but are not limited to, the following:
1. Support facilities, as follows:
 - a. Field office for Project Representative, complete with necessary furniture, supplies, and telephone service.
 - b. Project signs.
 - c. Temporary stairs.
 2. Security and protection facilities, as follows:
 - a. Environmental protection.
 - b. Security enclosure and lockup.
 - c. Barricades, warning signs, and lights.
 - d. Temporary railings.
 - e. Temporary egress.
 - f. Temporary partitions.
 - g. Temporary fire-protection facilities.
 3. Restoration of Owner's existing facilities used as temporary facilities.

1.10 GENERAL CONTRACT (GC-2) REQUIREMENTS

- A. Unless noted otherwise, Work in the General Contract includes, but is not limited to, that shown on the following Drawings:
1. Title Sheets.
 2. Symbols and Abbreviations (G) Drawings.
 3. Code Compliance (G) Drawings.
 4. General Information (G) Drawings.
 5. Phasing (G) Drawings.
 6. Hazardous Materials (H) Drawings.
 7. Structural (S) Drawings.
 8. Architectural (A) Drawings.
 9. Boundary Topographic Survey (AV) Drawings
 10. Civil/Landscape (C) Drawings
- B. Unless noted otherwise, Work in the General Contract includes, but is not limited to, that covered by the following Specifications:
1. Division 01 (General Requirements) Specification sections.
 2. Division 02 (Existing Conditions) Specification sections.
 3. Division 03 (Concrete) Specification sections.
 4. Division 04 (Masonry) Specification sections.
 5. Division 05 (Metals) Specification sections.
 6. Division 06 (Wood, Plastics, and Composites) Specification sections.
 7. Division 07 (Thermal and Moisture Protection) Specification sections.
 8. Division 08 (Openings) Specification sections.
 9. Division 09 (Finishes) Specification sections.
 10. Division 10 (Specialties) Specification sections.
 11. Division 12 (Furnishings) Specification sections.
 12. Division 31 (Earthwork) Specification sections.
 13. Division 32 (Exterior Improvements) Specification sections.
 14. Division 33 (Utilities) Specification sections.
- C. Temporary facilities and controls in the General Contract include, but are not limited to, the following:
1. Support facilities, as follows:
 - a. Field office for Project Representative, complete with necessary furniture, supplies, and telephone service.
 - b. Project signs.
 - c. Temporary stairs.
 - d. Temporary roads and paved areas.
 - e. Snow and ice removal.
 2. Security and protection facilities, as follows:
 - a. Environmental protection.
 - b. Security enclosure and lockup.
 - c. Barricades, warning signs, and lights.

- d. Temporary railings.
- e. Temporary egress.
- f. Temporary partitions.
- g. Temporary fire-protection facilities. Environmental protection.
- h. Stormwater control.
- i. Tree and plant protection.
- j. Site enclosure fence.
- k. Exterior barricades, warning signs, and lights.
- l. Temporary railings.
- m. Temporary site egress.

3. Restoration of Owner's existing facilities used as temporary facilities.

1.11 MECHANICAL CONTRACT (MC-1) REQUIREMENTS

A. Unless noted otherwise, Work in the Mechanical Contract includes, but is not limited to, that shown on the following Drawings:

- 1. Title Sheets.
- 2. Symbols and Abbreviations (G) Drawings.
- 3. General Information (G) Drawings.
- 4. Code Compliance (G) Drawings.
- 5. Phasing (G) Drawings.
- 6. Mechanical (M) Drawings.

B. Unless noted otherwise, Work in the Mechanical Contract includes, but is not limited to, the following:

- 1. Division 01 (General Requirements) Specification sections.
- 2. Division 02 (Existing Conditions) Specification sections.
- 3. Division 23 (Heating, Ventilating and Air Conditioning):

1.12 ELECTRICAL CONTRACT (EC-1) REQUIREMENTS

A. Unless noted otherwise, Work in the Electrical Contract includes, but is not limited to, that shown on the following Drawings:

- 1. Title Sheets.
- 2. Symbols and Abbreviations (G) Drawings.
- 3. General Information (G) Drawings.
- 4. Code Compliance (G) Drawings.
- 5. Phasing (G) Drawings.
- 6. Electrical (E) Drawings.

B. Unless noted otherwise, Work in the Electrical Contract includes, but is not limited to, the following:

- 1. Division 01 (General Requirements) Specification sections.

2. Division 02 (Existing Conditions) Specification sections.
 3. Division 11 (Equipment) Specification sections, as follows:
 - a. 11 61 53 Motorized Rigging.
 4. Division 26 (Electrical) Specification sections:
 5. Division 27 (Communications) Specification sections.
 6. Division 28 (Electronic Safety and Security) Specification sections:
- C. Temporary facilities and controls in the Electrical Contract include, but are not limited to, the following:
1. Temporary utilities, as follows:
 - a. Electric power service and distribution.
 - b. Lighting, including site lighting.
 2. Electric Power Service from Permanent Existing System: Electric power from permanent existing system is available for use. Provide metering, connections and extensions of services as required for construction operations. Separate metering for field offices from that for other construction purposes.
 - a. Construction Use Charges: Arrange for electric power service use charges for construction purposes to be billed directly from power company to Owner.
 - b. Field Office Use Charges: Pay electric power service use charges for electricity used by all entities for construction field offices.
 - 1) Maximum one 100 A, 240 V, single-phase connection per construction field office. Assume a diversified peak connected load factor of 12 kW.
 - 2) Maximum number of construction field offices: One per contract plus Project Representative field office.
 3. Restoration of Owner's existing facilities used as temporary facilities.

1.13 PLUMBING CONTRACT (PC-1) REQUIREMENTS

- A. Unless noted otherwise, Work in the Plumbing Contract includes, but is not limited to, that shown on the following Drawings:
1. Title Sheets.
 2. Symbols and Abbreviations (G) Drawings.
 3. General Information (G) Drawings.
 4. Code Compliance (G) Drawings.
 5. Phasing (G) Drawings.
 6. Plumbing (P) Drawings.

- B. Unless noted otherwise, Work in the Plumbing Contract includes, but is not limited to, the following:
 - 1. Division 01 (General Requirements) Specification sections.
 - 2. Division 02 (Existing Conditions) Specification sections.
 - 3. Division 22 (Plumbing) Specification sections:
- C. Temporary facilities and controls in the Plumbing Contract include, but are not limited to, the following:
 - 1. Temporary utilities, as follows:
 - a. Water service.
 - 2. Water Service from Existing System: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for use by all entities for construction operations.
 - 3. Restoration of Owner's existing facilities used as temporary facilities.

1.14 ACCESS TO SITE

- A. General: 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. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Driveways, Walkways and Entrances: Keep driveways, loading areas, 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 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.
- C. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.
- D. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.15 COORDINATION WITH OCCUPANTS

- A. Owner Occupancy: Owner will occupy site and existing and adjacent building(s) during entire construction period with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
 - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Construction Manager and approval of authorities having jurisdiction.
 - 2. Maintain in operation all life safety provisions and devices (including, but not limited to, fire alarms, fire extinguishers, smoke detectors, heat sensors, emergency and exit lighting, defibrillators, and similar items).
 - 3. Notify the Construction Manager not less than 72 hours in advance of activities that will affect Owner's operations.
- B. Coordination with School Schedule:
 - 1. Normal School Year: Owner intends to maintain a full educational program during the normal school year throughout duration of Project, and will make full use of the building and site, unless noted otherwise.
 - a. School and special activities may be conducted within building and on site outside regular school hours, including holidays and weekends.
 - b. Owner's personnel will perform normal custodial and maintenance services for the building areas and systems not involved in construction activities, unless noted otherwise.
 - 2. Summer: Owner may schedule a summer school program or organized recreation activities at the building or site.
 - a. Owner will staff building, at a minimum, with administrative, custodial and maintenance personnel during summer period.
- C. Identification: The Contractor shall require its personnel and those of its subcontractors, sub-subcontractors and suppliers to wear yellow safety vests and visible photo-identification badges acceptable to the Owner, at all times for identification and security purposes.

1.16 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
 - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.

- B. On-Site Work Hours: Limit work to normal business working hours of 7:00 AM. to 10:00 PM., Monday through Friday, except as otherwise indicated. Movement of materials is not permitted in Owner-occupied areas during normal business hours.
1. Other Weekday Hours: At Owner's discretion.
 2. Weekend Hours: At Owner's discretion.
 3. Hours for Noisy Activity (in excess of 60 dB): At Owner's discretion in non-student-occupied areas while school is in session.
- C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
1. Notify Construction Manager not less than 72 hours in advance of proposed utility interruptions.
 2. Obtain Construction Manager's written permission before proceeding with utility interruptions.
- D. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy.
1. Notify Construction Manager not less than 72 hours in advance of proposed disruptive operations.
 2. Obtain Construction Manager's written permission before proceeding with disruptive operations.
- E. Indoor Air Quality (IAQ): Protect indoor air quality, including control of emissions and moisture control during construction. Develop a construction IAQ management plan to be followed.
1. Control of Emissions: Provide measures and conduct operations to:
 - a. Protect HVAC systems.
 - b. Protect against emissions from such sources as environmental tobacco smoke, combustion contaminants, biological contaminants, volatile organic compounds (VOCs), formaldehyde, soil gases, pesticides, particles and fibers.
 - c. Provide low- and zero-VOC materials.
 - d. Protect against dust infiltration, especially during dust-producing activities.
 - e. Isolate work areas to prevent contamination of clean or occupied spaces.
 - f. Continuously maintain and regularly inspect areas and IAQ measures to prevent contamination of building areas.
 - g. Provide adequate ventilation, including, but not limited to:

- 1) Minimum **48-hour** pre-ventilation of packaged dry products which have odors or VOC emissions, prior to installation. Condition products without containers and packaging to maximize off-gassing of VOCs.
 - 2) Adequate ventilation during and after installation of interior wet products and interior final finishes, and
 - 3) Appropriate air filtration, including filter replacement.
- h. Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible.
 - i. Vacuum carpeted and soft surfaces with a high-efficiency particulate arrestor (HEPA) vacuum.
 - j. Flush out building for a minimum of **72 hours**, or longer if required to dissipate emissions, prior to occupancy.
2. Moisture Control: Provide measures and conduct operations to:
 - a. Provide proper housekeeping to keep materials dry.
 - b. Inspect areas and materials for dampness and mold growth.
 - c. Schedule construction operations so that absorptive materials are protected and weather-proof building as quickly as possible.
 - d. Test for moisture content, moisture penetration and microbial growth to maintain within permissible limits.

F. Comply with requirements in Division 01 Section "Governmental Safety Requirements".

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 12 00

SECTION 01 21 00 - ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements governing allowances.
- B. Types of allowances include the following:
 - 1. Contingency allowances.

1.3 ACTION SUBMITTALS

- A. Submit proposals for purchase of products or systems included in allowances.

1.4 INFORMATIONAL SUBMITTALS

- A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
- B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.
- C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

- A. Coordinate allowance items with other portions of the Work.

1.6 CONTINGENCY ALLOWANCES

- A. Use the contingency allowance only as directed by Architect for Owner's purposes.
- B. Allowance shall include cost to Contractor of specific products and materials under allowance and shall include taxes, freight, and delivery to Project site. Contractor's costs for receiving and handling at Project site, labor, installation, and similar costs related to products and materials under allowance shall be included as part of the allowance.
- C. Overhead and profit related to the allowance shall be included as part of the Contract Sum and not part of the allowance.

1.7 ALLOWANCE PROCEDURES

- A. Authorization for use of allowances is documented through Allowance Access Authorization form provided in the Project Manual, accompanied by substantiating data.
- B. At Project closeout, unused amounts remaining in the allowances will be credited to Owner by Change Order.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.2 SCHEDULE OF ALLOWANCES - GENERAL WORK CONTRACT (GC-1)

- A. Allowance No. 1: Contingency Allowance: Include the sum of **\$225,000** for use according to Owner's instructions and for hidden and unforeseen conditions discovered during construction.

3.3 SCHEDULE OF ALLOWANCES - GENERAL WORK CONTRACT (GC-2)

- A. Allowance No. 2: Contingency Allowance: Include the sum of **\$150,000** for use according to Owner's instructions and for hidden and unforeseen conditions discovered during construction.

3.4 SCHEDULE OF ALLOWANCES - PLUMBING WORK CONTRACT (PC-1)

- A. Allowance No. 3: Contingency Allowance: Include the sum of **\$50,000** for use according to Owner's instructions and for hidden and unforeseen conditions discovered during construction.

3.5 SCHEDULE OF ALLOWANCES - MECHANICAL WORK CONTRACT (MC-1)

- A. Allowance No. 4: Contingency Allowance: Include the sum of **\$100,000** for use according to Owner's instructions and for hidden and unforeseen conditions discovered during construction.

3.6 SCHEDULE OF ALLOWANCES - ELECTRICAL WORK CONTRACT (EC-1)

- A. Allowance No. 5: Contingency Allowance: Include the sum of **\$125,000** for use according to Owner's instructions and for hidden and unforeseen conditions discovered during construction.

3.7 SCHEDULE OF ALLOWANCES –ALL CONTRACTS

Allowance	Contract	Type	Amount
1	GC-1	Contingency	\$225,000
2	GC-2	Contingency	\$150,000
3	PC-1	Contingency	\$50,000
4	MC-1	Contingency	\$100,000
5	EC-1	Contingency	\$125,000

Attachment: Allowance Access Authorization

END OF SECTION 01 21 00

ALLOWANCE ACCESS AUTHORIZATION:

Project: Reconstruction to Walter Panas High School, Lakeland High School and Lakeland Copper Beech Middle School

Architect: Tetra Tech Architects & Engineers

Project No. 276721-23001

Contractor:

AAA No.:

Initiation Date:

The Allowance is allocated as follows:

Total original Contract Allowance was:	\$
Amount of Contract Allowance Access previously authorized:	\$
Adjusted Contract Allowance prior to this authorization is:	\$
The amount of available Allowance will Decrease by this Access Authorization:	\$
The remaining Contract Allowance, after this Access Authorization will be:	\$

Recommended by:
Architect

Recommended by:
Construction Manager [if applicable]

By (Signature): _____

By (Signature): _____

Date: _____

Date: _____

Accepted by:
Contractor

Approved by:
Owner

By (Signature): _____

By (Signature): _____

Date: _____

Date: _____

SECTION 01 23 00 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
 - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
 - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration.
- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. LHS-01 - LAKELAND HIGH SCHOOL AUDITORIUM CARPETING AND AISLE LIGHTING REPLACEMENT

1. This Alternate affects more than one Contract, as follows:
 - a. General Contract: In addition to Work by Base Bid at Lakeland High School, provide improvements associated with the reconstruction work in the Auditorium, remove and replace existing carpeting as noted on the project drawings and as specified in the Project Manual.
 - b. Plumbing Contract: No Scope.
 - c. Mechanical Contract: No Scope.
 - d. Electrical Contract: In addition to Work by Base Bid at Lakeland High School, provide improvements associated with the reconstruction work in the Auditorium, remove and replace existing aisle lighting as noted on the project drawings and as specified in the Project Manual.

B. Alternate No. CB-01 - LAKELAND-COPPER BEECH MIDDLE SCHOOL FAMILY AND CONSUMER SCIENCE ROOMS

1. This Alternate affects more than one Contract, as follows:
 - a. General Contract: In addition to Work by Base Bid at Copper Beech Middle School, provide improvements associated with the reconstruction of the Family and Consumer Science Rooms 338, 339, 339A, 339B, adjacent courtyard and associated improvement for the reconstruction of the aforementioned improvements. Work as shown on Drawings DA103, DA133, DA160, DA600, DA900, DA903, DA930 and specified in Project Manual.
 - b. Plumbing Contract: In addition to Work by Base Bid at Copper Beech Middle School, provide improvements associated with the reconstruction of the Family and Consumer Science Rooms 338, 339, 339A, 339B and associated improvement for the reconstruction of the aforementioned improvements. Work as shown on Drawings DP400 and specified in Project Manual.
 - c. Mechanical Contract: In addition to Work by Base Bid at Copper Beech Middle School, provide improvements associated with the reconstruction of the Family and Consumer Science Rooms 338, 339, 339A, 339B, adjacent courtyard, and associated improvement for the reconstruction of the aforementioned improvements. Work as shown on Drawings DM101, DM131 and specified in Project Manual.

- d. Electrical Contract: In addition to Work by Base Bid at Copper Beech Middle School, provide improvements associated with the reconstruction of the Family and Consumer Science Rooms 338, 339, 339A, 339B, adjacent courtyard, storage room adjacent to Gym “A” and associated improvement for the reconstruction of the aforementioned improvements. Work as shown on Drawings DE103 and specified in Project Manual.
- C. Alternate No. CB-02 - SIDEWALK AT SOUTH SIDE OF LAKELAND-COPPER BEECH MIDDLE SCHOOL
 - 1. General Contract: In addition to Site Work by Base Bid at Lakeland-Copper Beech Middle School, remove existing surface and subbase as required and provide new concrete sidewalk and associated improvement along the south side of the building. Work as shown on Drawings DC100, DC110, DC120, DC130, DC140 and specified in Project Manual.
- D. Alternate No. CB-03 - SIDEWALK AT EAST SIDE OF LAKELAND-COPPER BEECH MIDDLE SCHOOL
 - 1. General Contract: In addition to Site Work by Base Bid at Lakeland-Copper Beech Middle School, remove existing surface and subbase as required and provide new concrete sidewalk and associated improvement along the east side of the building. Work as shown on Drawings DC100, DC110, DC120, DC130, DC140 and specified in Project Manual.
- E. Alternate No. CB-04 - ASPHALT PAVEMENT AND STORM PIPING AT EAST SIDE OF LAKELAND-COPPER BEECH MIDDLE SCHOOL
 - 1. General Contract: In addition to Site Work by Base Bid at Lakeland-Copper Beech Middle School, remove existing asphalt pavement and subbase as required and provide new storm piping and asphalt pavement and associated improvement on the east side of the building. Work as shown on Drawings DC100, DC110, DC120, DC130, DC140 and specified in Project Manual.

END OF SECTION 01 23 00

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for substitutions.

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.
 - 2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Owner.

1.4 ACTION SUBMITTALS

- A. Substitution Requests: Identify 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 the “Request for Substitution” form attached to this Specification Section. Complete all sections of the form.
 - 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Information to support identification of the proposed substitution as “for Cause” or “for Convenience”.
 - b. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
 - c. Coordination 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.

- d. Detailed comparison of significant qualities of proposed substitution 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.
 - e. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - f. Samples, where applicable or requested.
 - g. Certificates and qualification data, where applicable or requested.
 - h. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - i. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - j. Evidence of compliance with building code in effect for Project.
 - k. Detailed comparison of Contractor's construction schedule using proposed substitution 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.
 - l. Cost information, including a proposal of change, if any, in the Contract Sum.
 - m. 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.
 - n. 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. Such additional information or documentation may include detailed side-by-side comparison charts of the specified product and the proposed substitution, and other data. Only one substitution request for each product will be considered. Architect will make final determination as to whether the substitution is "for Cause" or "for Convenience".
- a. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution.
 - b. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

1.5 QUALITY ASSURANCE

- A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials.

1.6 PROCEDURES

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

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change.
 - 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. Substitution request is fully documented and properly submitted.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution is compatible with other portions of the Work.
 - e. Requested substitution has been coordinated with other portions of the Work.
 - f. Requested substitution provides specified warranty.
 - g. 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: Architect will consider requests for substitution if received within 15 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.
 - 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 offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
- b. Requested substitution does not require extensive revisions to the Contract Documents.
- c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
- d. Substitution request is fully documented and properly submitted.
- e. Requested substitution will not adversely affect Contractor's construction schedule.
- 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.

PART 3 - EXECUTION (Not Used)

Attachment: Request for Substitution Form

END OF SECTION 01 25 00



Request for Substitution

.....

This form must be completely filled in with all relevant data by the Prime Contractor and submitted to the Architect in accordance with Project Manual Requirements for consideration before any request to change the drawing or specification requirements will be considered.

REFERENCE DATA

Project name: _____ Date of Request: _____
Location: _____ Architect's Project No.: _____
Request by Contractor: _____
Address: _____
Contact person: _____ Phone: _____ Email: _____

SUBSTITUTION REQUEST DATA

(Provide statement indicating why specified product, fabrication or installation cannot be provided.)

SUBSTITUTION REQUESTED IS FOR: _____ Reason for request: _____

☐ Named product. _____

☐ Product type, material, finish or formulation. _____

☐ Fabrication or installation methods. _____

Note whether substitution is for cause or convenience: _____

PRODUCT / MATERIAL / METHOD FOR WHICH SUBSTITUTION IS REQUESTED IS SHOWN ON THE FOLLOWING DOCUMENTS:

Specification: Section No.: _____ Page(s): _____ Paragraph/Item No.: _____

Drawings: (List No.'s of all Drawings affected): _____

DETAILED COMPARISON

Detailed comparison of significant qualities of proposed substitution 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.

COST/BENEFIT ANALYSIS

Describe in detail any alteration to any other part of the Works required by use of the requested substitution, including work by other Prime Contractors:

If applicable total net cost of any such other project required alterations, including overhead and profit: \$ _____
(Indicate if cost is an "Add" or "Deduct" to contract sum.

Benefits to Owner other than financial: _____

Schedule impact (Note any impact on project schedule by proposed substitution): _____

ADDITIONAL INFORMATION REQUIRED

PRIME CONTRACTOR TO PROVIDE ADDITIONAL INFORMATION AS NECESSARY AND ATTACH THE FOLLOWING INFORMATION:

1. Manufacturer's technical data sheets on proposed products, including test results as applicable.
2. Manufacturer's standard form of warranty.
3. Letter on manufacturer's letterhead stating that manufacturer will warrant products as specified, if specification requires specific warranties not included in manufacturer's standard form of warranty.
4. Letter(s) from other Prime Contractor(s) responsible for works affected by proposed substitution which state the total cost(s) of all such work, if any alteration of other work is required. Prime Contractor submitting this Request for Substitution will be responsible to fully reimburse the Owner for all such additional costs; processed via a deduct Change Order.

CONTRACTOR'S CERTIFICATION

1. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW, CONTRACTOR CERTIFIES THIS SUBSTITUTION REQUEST HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE PROJECT MANUAL REQUIREMENTS.
2. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW CONTRACTOR CERTIFIES THE PROPOSED SUBSTITUTION COMPLIES WITH ALL APPLICABLE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND REFERENCED CODES AND STANDARDS.
3. BY SUBMISSION OF THIS SUBSTITUTION REQUEST AND PER SIGNATURE BELOW CONTRACTOR HEREBY WAIVES ALL RIGHTS TO ADDITIONAL COMPENSATION OR TIME THAT MAY SUBSEQUENTLY BECOME NECESSARY BECAUSE OF FAILURE OF PROPOSED MATERIAL TO PRODUCE THE INDICATED AND REQUIRED RESULTS.

Name of Authorized Contractor Representative: _____

Signature of Authorized Contractor Representative: _____

Name of Contractor _____

Date _____

SECTION 01 26 00 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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.

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, via the electronic form procedures outlined in Division 01 Section "Project Management and Coordination" and during the preconstruction conference.

1.4 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Architect will issue a description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time, via the electronic form procedures outlined in Division 01 Section "Project Management and Coordination" and during preconstruction conference. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
 - 2. Unless otherwise noted, within 14 days after receipt of Proposal Request, submit a quotation listing 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 forms acceptable to Architect.
 - f. If contractor fails to provide all information as noted above, Architect will return the submitted quotation noting the corrections required. If subsequent quotation submittal by the Contractor fails to comply with the format and protocols outlined above, the Owner is entitled for reimbursement from the Contractor for amounts paid to the Architect for review of additional quotation submissions.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may submit a request for a change to the Architect through Construction Manager.
 - 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 Division 01 Section "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
 - 7. Proposal Request Form: Use form acceptable to Architect.

1.5 ADMINISTRATIVE CHANGE ORDERS

- A. Allowance Adjustment: See Division 01 Section "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. On Owner's approval of a Proposal Request response, Architect will issue a Change Order for signatures of Owner, Architect, Construction Manager and Contractor.

1.7 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive: Architect may issue a Construction Change Directive. 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 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.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 26 00

SECTION 01 29 00 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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.

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.
- B. AIA Document: Current, authorized editions of standard forms issued by the American Institute of Architects (AIA).
 - 1. Where AIA Documents are identified in this Section, the use of facsimiles of AIA documents or non-AIA documents is prohibited.

1.4 SCHEDULE OF VALUES

- A. Submit the schedule of values to Architect through Construction Manager at earliest possible date, but no later than fourteen (14) days before the date scheduled for submittal of initial Applications for Payment.
- B. Format and Content:
 - 1. Use AIA Document G703 as form for schedule of values, with entries typewritten. unless noted otherwise, provide the following:
 - a. Sub-schedules for Separate Elements of Work: Provide sub-schedules for each building.
 - 1) List allowances on sub-schedules only where exclusively part of separate element of work.
 - b. Summary Schedule: Provide summary schedule listing each sub-schedule and its total and each allowance; total of all sub-schedules and allowances shall equal the Contract Sum.

2. Identification: Include the following Project identification on the schedule of values:
 - a. Project name and location.
 - b. Architect's project number.
 - c. Contractor's name and address.
 - d. Date of submittal.
3. Use the Project Manual table of contents as a guide to establish line items for the schedule of values. Provide line item(s) for each Specification Section.
4. Arrange the schedule of values to indicate the following for each item listed, completing columns A, B and C of AIA Document G703:
 - a. Column A: Indicate Specification Section number.
 - b. Column B: Indicate Specification Section title, and provide separate line items for labor and materials.
 - c. Column C: Provide separate line item dollar values for labor and materials. Round amounts to nearest whole dollar.
5. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment. In addition to line items for each applicable specification section, include the following:
 - a. Multiple line items for amounts in excess of five percent of Contract Sum, broken out to subcomponents equaling not greater than five percent each.
 - b. Project Startup:
 - 1) Include separate line items for project startup requirements, including the following separate line items:
 - a) Insurance, based on actual invoice amount.
 - b) Performance and payment bonds, based on actual invoice amount.
 - c) Mobilization.
 - d) Temporary facilities and controls.
 - c. Allowances: Provide a separate line item in the schedule of values for each allowance.
 - d. Submittals: Include a minimum of Two percent of Contract Sum.
 - e. Supervision: Include a minimum of Two percent of Contract Sum.
 - f. Safety and Field Reports: Include a minimum of Two percent of Contract Sum.
 - g. Coordination Drawings: Provide a separate line item in the schedule of values for Coordination Drawings. Include a minimum of the following percentages of Contract Sum.
 - 1) Mechanical Contract: Two (2) percent of the Contract Sum.
 - 2) All Other Contracts: Two (2) percent of the Contract Sum.

- h. Meetings: Provide a separate line item in the schedule of values for Contractor attendance at meetings. Include a minimum of Two (2) percentage of Contract Sum.
 - i. Wood Blocking: Provide a separate line item in the schedule of values for wood blocking.
 - j. Testing and Balancing (TAB): Include a minimum of Two (2) percent of the Contract Sum (Mechanical Contract: Two (2)) percent as separate line items for testing and balancing requirements, as follows:
 - 1) Pre-TAB activities (20 percent of TAB).
 - 2) TAB activities (40 percent of TAB).
 - 3) Final TAB reports. (40 percent of TAB).
 - k. Punch List: Three (3) percent of Contract Sum.
 - l. Project Closeout:
 - 1) Include separate line items for project closeout requirements, as follows:
 - a) Demobilization.
 - b) Warranties.
 - c) Final cleaning.
 - d) Operation and maintenance manuals.
 - e) Project record documents.
 - f) Demonstration and training.
 - 2) The total value of all project closeout line items shall equal to not less than the following:
 - a) Five (5) percent of the Contract Sum.
6. Each item in the schedule of values shall be complete. Include total cost and proportionate share of general overhead and profit for each item.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications as certified by Architect and Construction Manager.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. 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 seven (7) days prior to due date for review by Construction Manager.
- C. Application for Payment Forms: Use AIA Document G732 and AIA Document G703 as form for Applications for Payment.

- D. **Application Preparation:** Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Construction Manager will return incomplete applications without action.
1. Entries shall match data on the schedule of values.
 2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received.
 3. Include amounts of fully-executed Change Orders and Construction Change Directives issued before last day of construction period covered by application.
- 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. Enter in column F (Materials Presently Stored) of AIA Document G703 the value of materials presently stored for which payment is sought. Recalculate the total of the column at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed--This Period.).
 2. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment, for stored materials.
 3. 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.
- F. **Transmittal:** Submit three (3) signed and notarized original copies of each Application for Payment to Construction Manager.
- G. **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.
 4. Certificates of insurance and insurance policies.
 5. Performance and payment bonds.
- H. **Final Payment Application:** Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited to, two originals and two copies each of the following:
1. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 2. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 3. AIA Document G707, "Consent of Surety to Final Payment."

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachment: Stored Materials Invoicing Documentation

END OF SECTION 01 29 00



TETRA TECH
ARCHITECTS & ENGINEERS

Stored Materials Invoicing
Documentation

Project: _____

Project No.: _____ **Contract Type:** _____

Contractor: _____ **Subcontractor:** _____

Reason for Request:

Application for Payment No.: _____ **Date:** _____

1. **Material Identification**

Description:

Quantity:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Provide Specific Location of Materials Stored:

2. **Material Value** \$ _____

☐ Attach an Invoice or Quantified Statement of Value.

3. **Certificate of Insurance**

☐ Attach a Certificate of Insurance for the above specified materials. Certificate shall name _____
(Name of District)
as a loss payee with respect to the specified materials.

4. **Transfer of Title**

The Contractor hereby agrees to transfer complete ownership of all listed materials to _____
(Name of District)
at the time payment is made to Contractor for the above referenced Application for Payment. The Contractor remains responsible for all contractual requirements for the above listed materials including complete installation and providing all warranties.

Signed

Date

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 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. Digital data files.
 - 3. Coordination drawings.
 - 4. Owner's Project Representative activities.
 - 5. Electronic form procedures.
 - 6. Requests for Information (RFIs).
 - 7. Project meetings.

1.3 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, which depend on each other for proper installation, connection, and operation. Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work.
 - 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.
 - 2. Coordinate installation of different components with other contractors to ensure maximum performance and accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors 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. Installation and removal of temporary facilities and controls.
 - 3. Project meetings.
 - 4. Project closeout activities.

- C. 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.

1.4 DIGITAL DATA FILES

- A. Architect's Digital Data Files: Upon request, and at Architect's sole discretion, electronic copies of the Contract Drawings may be provided by Architect for Contractor's use in preparing submittals.

- 1. Architect may furnish Contractor digital data drawing files of the Contract Drawings for use in preparing Shop 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. Format: The Contract Drawings may be available in AutoCAD and .pdf formats.
 - 1) Architect's charge for drawings in AutoCAD format: \$50 per drawing.
 - 2) Architect's charge for drawings in .pdf format: \$50 per request.
 - c. Contractor shall fill out and submit a Request for Electronic Drawing Files form included in Project Manual for any drawing files.
 - d. Contractor shall also execute a Terms of Electronic File Transfer (TOFT) included in Project Manual for any drawing files furnished in AutoCAD format.
 - e. The following drawings may be furnished for the appropriate discipline:
 - 1) Site base file drawings.
 - 2) Floor plans.
 - 3) Reflected ceiling plans.

1.5 COORDINATION DRAWINGS

- A. Each Contractor:
 - 1. Participate in the Coordination Drawing process as required to ensure work is coordinated with associated Contractors to fulfill the scope and schedule of the project. Contractors with work in areas where more than one Contractor has Contract Work must participate in coordination process for that area of work.
 - 2. Architect will furnish Contractor with digital media copies of architectural, structural, mechanical, plumbing, and electrical base information, not including drawing sheets or details, at no charge, upon providing Architect with a fully-executed indemnification agreement.

3. At an initial coordination meeting scheduled by the Mechanical Contractor and Construction Manager in accordance with schedule defined in Division 01 Section - Multiple Project Summary – Project Schedule, coordinate the schedule of the creation and revision of Coordination Drawings with the Architect, Construction Manager, Owner, and involved Contractors as required to meet the construction schedule.
4. Revise Coordination Drawings identifying work of applicable Contract that requires coordination with building systems or that presents potential interference with existing construction or construction provided by another Contractor. Examples of these components and work include (but are not limited to):
 - a. Systems located above ceilings or integrated into ceiling system such as ducts, piping, lighting, cable trays, electrical conduits, joist cross bracing, structure, supports, fire protection systems, diffusers, grilles, access doors, etc.
 - b. Components of systems installed on roofs requiring roof penetrations, structural support, lightning protection, etc.
 - c. Components suspended or otherwise inside spaces such as gymnasium backstops, light fixtures, ducts, gymnasium dividers, web spaces of trusses with duct/pipe, etc.
 - d. Clearances required for service access or by codes. Show service access locations including brief note such as “service access to filters”.
 - e. Equipment located adjacent to building that may need coordination with landscaping such as dust collectors, transformers, gas metering stations, chillers and condensing units, pads, louvers, etc.
5. Resolution of Conflicts and Interferences:
 - a. Schedule additional coordination meetings through Construction Manager with Architect, Owner, and other Contractors and attend additional coordination meetings as required to fully resolve conflicts and complete process.
 - b. Review draft revisions of respective trades and Owner at subsequent coordination meetings with involved parties. Resolve conflicts and interferences at these meetings.
 - c. Reposition proposed locations of components and equipment in applicable Contracts as required to resolve conflicts and address Owner’s serviceability concerns after review of Coordination Drawings. For exposed work, adjust and coordinate configuration of components to achieve aesthetics consistent with the scope of the Project without increase in Contract Sum.

- d. Notify Construction Manager, Architect, Owner's Representative, and affected Contractors in case of unresolved interferences or conflicts prior to installation of construction. Schedule meetings and take other measures to resolve interferences or conflicts and revise applicable Coordination Drawings as required. Re-process revised Coordination Drawings in accordance with "Processing of Coordination Drawings" below to ensure all Contractors are aware of revisions in Coordination Drawings.
 - e. When all conflicts have been resolved on each complete Coordination Drawing, each applicable Contractor shall digitally sign and date the drawings, and deliver to the Mechanical Contractor for additional distribution. A copy of the signed originals will be stored in the Construction Manager's jobsite offices for reference for the duration of the construction.
 - f. Each Contractor will be provided with a copy of each coordination drawing and may transcribe additional information from the copies stored in the Construction Manager's jobsite offices.
6. Do not proceed with work in Contract in each area until agreement is reached with all Contractors and the Construction Manager, Architect and Owner on exact arrangements for each room or area, unless otherwise directed by the Construction Manager, Architect or Owner.
- a. If Contractor proceeds prior to resolving conflicts and receiving above agreement or direction and conflicts ensue as a result, Contractor must modify installed construction as required to permit other Contractors to proceed with coordinated installation at no change in Contract Sum.

B. Mechanical Contract:

- 1. In accordance with the Coordination Drawing creation schedule agreed to as described above, prepare and distribute Coordination Drawings as specified in the Division 23 Sections "Common Work Results for HVAC" and "Ductwork", for all areas with any construction work, including indoor areas and rooms, roofs, and near building areas with mechanical equipment. Consider construction of other Contracts as shown in Contract Documents to avoid conflicts. Prepare and revise the Coordination Drawings in the order and within the schedule agreed upon.
- 2. Coordinate the scheduling of coordination meetings with the project schedule Construction Manager, Architect, involved Contractors, and Owner. Schedule the meetings at the agreed upon schedule.
- 3. Deliver two (2) prints and one electronic file in format as required elsewhere and as agreed to at the initial coordination meeting, of each Coordination Drawing simultaneously to Construction Manager, Architect, Owner, and each Contractor listed below and obtain written dated receipts from other contractors. Include additional print copy and electronic copy to Electrical Contractor, to become "Complete Coordination Drawing" for subsequent distribution and complete final coordination documentation as described below. Submit copy of receipts to Architect and Construction Manager.

4. Duplicate and deliver final complete drawings as required by Division 23 Section "Ductwork."

C. Contractors other than Mechanical Contractor:

1. Obtain Coordination Drawings and prepare draft revisions to Coordination Drawings showing applicable work of respective Contract and indicating perceived conflicts, proposed resolution of conflicts with existing conditions and construction of other Contracts as shown in Coordination Drawings.
2. Revise the Coordination Drawings in the order and within the schedule agreed upon.
3. Obtain Complete Coordination Drawing prints and revise showing components and work of applicable Contract including resolution of conflicts with construction of other Contracts as agreed to and as shown on revised draft Coordination Drawings.
4. Processing of Coordination Drawings: Receive, revise, and deliver Complete Coordination Drawings initially prepared by Mechanical Contractor according to the following sequence as applicable to Project.
5. Each Contractor: Obtain written dated receipt from subsequent recipient of Complete Coordination Drawings and submit copy of receipts to Architect and Construction Manager:
 - a. Mechanical Contract.
 - b. Electrical Contract.
 - c. General Contract.
 - d. Plumbing Contract.

1.6 OWNER'S PROJECT REPRESENTATIVE ACTIVITIES

A. Project Representative shall:

1. Serve as liaison between Architect, Contractor[s] and Owner.
2. Perform on-site observations of the progress and quality of the Work as may be reasonably necessary to assist the Architect determine, in general, if the Work is being performed in a manner indicating that the Work when completed will be in conformance with the Contract Documents. Notify the Architect if, in the Project Representative's opinion, Work does not conform to the Contract Documents or requires special inspection or testing.
3. Monitor the Contractor's construction schedules on an ongoing basis and alert the Architect to conditions that may lead to delays in completion of the Work.
4. Coordinate shared access to work areas.
5. Coordinate and issue written approvals for acceptable interruptions of utilities and potentially disruptive activities.

6. Receive and review suggestions proposed by the Contractor, and submit them, together with recommendations, to the Architect.
7. Attend all meetings and report to the Architect on the proceedings.
8. Notify Architect when tests required by the Contract Documents and inspections by authorities having jurisdiction will be performed. Observe tests required by the Contract Documents and inspections by authorities having jurisdiction. Record and report to the Architect on test procedures, inspections, and results. Verify testing is performed in accordance with specified requirements and at appropriate times.
9. Maintain records at the construction site in an orderly manner, including correspondence, Contract Documents, Change Orders, Construction Change Directives, reports of meetings, Shop Drawings, Product Data and similar submittals; supplementary drawings, color schedules and requests for payment; and names, addresses telephone numbers, and email addresses of the Contractors, Subcontractors and principal material suppliers.
10. Maintain a daily log of activities at the site, including weather conditions, nature and location of Work being performed, verbal instructions and interpretations given to the Contractor, and specific observations. Record any occurrence or Work that might result in a claim for a change in Contract Sum or Contract Time. Maintain a list of visitors, their titles, and time and purpose of their visit.
11. Notify the Architect if any portion of the Work requiring Shop Drawings, Product Data or Samples is commenced before such submittals have been approved by the Architect. Receive and log Samples required at the site, notify the Architect when they are ready for examination, record the Architect's action and maintain custody of approved Samples.
12. Review the Contractor's record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications at intervals appropriate to the stage of construction and notify the Architect of any apparent failure by the Contractor to maintain up-to-date records.
13. Review Applications for Payment and forward to the Architect with recommendations for disposition.
14. Assist the Architect in conducting inspections to determine the date or dates of Substantial Completion and the date of final completion.
15. Assist the Architect in receipt and transmittal to the Owner of documentation required of the Contractor at completion of the Work.

B. Project Representative shall not:

1. Authorize deviations from the Contract Documents.
2. Approve submittals or substitute materials or equipment.
3. Personally conduct or participate in tests or third party inspections.

4. Assume any of the responsibilities of the Contractor's superintendent or of Subcontractors.
5. Expedite the Work for the Contractor.
6. Have control over or charge of or be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work.
7. Authorize or suggest that the Owner occupy the Project in whole or in part.

1.7 ELECTRONIC FORM PROCEDURES

- A. Use Architect's electronic form procedures for the following functions:
 1. Request for Information (RFI) forms and logs.
 2. Architect's Supplemental Instruction (ASI) forms and logs. Refer to Division 01 Section "Contract Modification Procedures".
 3. Proposal Request (PR) forms and logs. Refer to Division 01 Section "Contract Modification Procedures".
- B. Contractor and other parties granted access by the Architect to Project electronic form procedures shall follow instructions issued by the Architect during the preconstruction conference.

1.8 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified, via the electronic form procedures outlined.
 1. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of others.
- B. Content of the RFI: Include a detailed description of item needing information or interpretation and the following:
 1. Project number.
 2. RFI number.
 3. Contract number and title.
 4. Name of Contractor.
 5. Name of Contractor's contact person.
 6. Email address of Contractor's contact person.
 7. RFI subject.

8. Question: Fully describe question or information requested. Include:
 - a. Specification Section number and title and related paragraphs, as appropriate.
 - b. Drawing number and detail references, as appropriate.
 - c. Field dimensions and conditions, as appropriate.
 - d. Contractor's suggested resolution. If Contractor's solution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
9. 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. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow reasonable time for Architect's response for each RFI.
 1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or inaccurately prepared RFIs.
 2. Architect's action may include a request for 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 Change Proposal according to Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect and Construction Manager in writing within seven days of receipt of the RFI response.
- D. On receipt of Architect's action, immediately distribute the RFI response to affected parties. Review response and notify Architect and Construction Manager within seven (7) days if Contractor disagrees with response.
- E. Electronic RFI Log: Architect will maintain a tabular log of RFIs organized by RFI number.

1.9 PROJECT MEETINGS

- A. Preconstruction Conference: Construction Manager will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner, Construction Manager and Architect, but no later than 15 days after date of Notice of Award.

1. Attendees: Authorized representatives of Owner, Commissioning Authority, Construction Manager, Architect, and their consultants; Contractor and its superintendent; 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. Designation of key personnel and their duties.
 - b. Lines of communications.
 - c. Bonds and insurance.
 - d. Subcontract list.
 - e. Schedule of values.
 - f. Payment request estimate.
 - g. Applications for Payment.
 - h. Contractor's construction schedule.
 - i. Submittals.
 - j. Electronic form procedures (RFIs, ASIs, PRs).
 - k. Procedures for processing Change Orders and Construction Change Directives.
 - l. Quality control.
 - m. Adjoining properties.
 - n. Project schedule.
 - o. Contractor review of Contract Documents, including Drawings and Specifications.
 - p. Project meetings.
 - q. Project closeout procedures.
 - r. Electronic drawings.
 - s. AIA and Word documents.
 3. Report: Construction Manager will prepare and distribute meeting report.
- B. Site Preconstruction Conference: Construction Manager will schedule and conduct a site preconstruction conference, at a time convenient to Owner, Construction Manager and Architect.
1. Attendees: Authorized representatives of Owner, Owner's testing agency, Construction Manager, Architect, and their consultants; Geotechnical Engineer of Record; Contractor and its superintendent; 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, including the following:
 - a. Designation of key personnel and their duties.
 - b. Lines of communication.
 - c. Electronic form procedures (RFIs, ASIs, PRs).
 - d. Submittal procedures.
 - e. Subcontracts.
 - f. Construction schedule.
 - g. Temporary facilities and controls.
 - h. Use of premises.

- i. Permits.
 - j. Soil erosion and sediment control.
 - k. Tree protection.
 - l. Procedures for testing and inspecting.
 - m. Roles and responsibilities of each party.
 - n. Topsoil.
 - o. Seeding/sodding.
 - p. Planting.
 - q. Concrete.
 - r. Retaining walls.
 - s. Planting islands.
 - t. Railings.
 - u. Staging removal.
3. Report: Construction Manager will prepare and distribute meeting report.
- C. Structural Preconstruction Conference: Construction Manager will schedule and conduct a structural preconstruction conference, at a time convenient to Owner, Construction Manager and Architect.
- 1. Attendees: Authorized representatives of Owner, Owner's testing agency, Construction Manager, Architect, and their consultants; Geotechnical Engineer of Record; Contractor and its superintendent; 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, including the following:
 - a. Procedures for testing and inspecting.
 - b. Submittals.
 - c. Testing, placing, curing and finishing structural concrete.
 - d. Hot/cold weather concrete construction.
 - e. Fabrication and erection of structural steel.
 - f. Attaching metal floor and roof deck, as applicable.
 - g. Procedures for constructing composite slabs, as applicable.
 - h. Procedures for unit masonry control joints, grouting, and workmanship.
 - i. Hot/cold weather masonry construction.
 - j. Cold formed metal framing.
 - k. Roles of each party regarding the above work items.
 - 3. Report: Construction Manager will prepare and distribute meeting report.
- D. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Review each Specification Section for requirements for preinstallation conferences.
 - a. No later than 15 days after date of Notice of Award, submit to Architect complete listing of preinstallation conferences to be held.

2. 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 Architect, Construction Manager, Commissioning Authority and Project Representative of scheduled meeting dates.
 3. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Deliveries.
 - c. Submittals.
 - d. Review of mockups.
 - e. Time schedules.
 - f. Weather limitations.
 - g. Manufacturer's written instructions.
 - h. Warranty requirements.
 - i. Compatibility of materials.
 - j. Acceptability of substrates.
 - k. Temporary facilities and controls.
 - l. Space and access limitations.
 - m. Testing and inspecting requirements.
 - n. Installation procedures.
 - o. Coordination with other work.
 - p. Required performance results.
 - q. Protection of adjacent work.
 4. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 5. Reporting: Distribute report of the meeting to each party present and to other parties requiring information.
 6. 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.
- E. Progress Meetings: Construction Manager will conduct progress meetings at biweekly intervals, unless otherwise necessitated.
1. Attendees: In addition to representatives of Owner, Commissioning Authority, Construction Manager, 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.
 2. Agenda: Review report of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

- a. Review present and future needs of each entity present, including the following:
 - 1) Report of progress since previous meeting.
 - 2) Architect/Engineer discussion items.
 - 3) Status of ASIs, PRs, Change Orders.
 - 4) Status of submittals.
 - 5) 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.
 - a) 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) Review schedule for next period.
 - 6) Date of Substantial Completion.
 - 7) Status of RFIs.
 - 8) Owner discussion items.
 - 9) Discussion items for each Contract.
 - 10) General and administrative items, including such items as:
 - a) Project documentation.
 - b) Prohibitions.
 - c) Identification cards.
 - d) Separation.
 - e) Egress.
 - f) Conservation.
- 3. Report: Construction Manager will prepare and distribute the meeting report to each party present and to parties requiring information.
- F. Health and Safety Committee Meetings: Owner will conduct health and safety committee meetings as needed, in accordance with requirements of Regulations of the Commissioner of Education, Part 155 (8 NYCRR 155), Section 155.5(c)(2).
 - 1. Attendees: In addition to representatives of the Owner and Construction Manager, each contractor 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.

2. Agenda: Discuss items of significance, including the following:
 - a. Health and safety matters related to the construction project.
 3. Report: Owner will prepare and distribute meeting report to each party present and to parties requiring information.
- G. Project Closeout Conference: Construction Manager will schedule and conduct a project closeout conference, at a time convenient to Owner, Construction Manager and Architect, but no later than 90 days prior to each scheduled date of Substantial Completion.
1. Attendees: Authorized representatives of Owner, Commissioning Authority, Construction Manager, Architect, and their consultants; Contractor and its superintendent; 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.
 2. 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. Submittal of written warranties.
 - d. Requirements for preparing operations and maintenance data.
 - e. Requirements for delivery of material samples, attic stock, and spare parts.
 - f. Requirements for demonstration and training.
 - g. Owner's occupancy requirements.
 - h. Responsibility for removing temporary facilities and controls.
 3. Report: Construction Manager will prepare and distribute meeting report.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachment: Request for Electronic Drawing Files
Terms of Electronic File Transfer (TOFT)

END OF SECTION 01 31 00



TETRA TECH
ARCHITECTS & ENGINEERS

Cornell Business + Technology Park
10 Brown Road
Ithaca, New York 14850
Tel. (607) 277-7100
Fax (607) 277-1410

Request for Electronic Drawing Files – Business Office

Prime Contractor Name:

Prime Contractor Address:

Contact to Receive Invoice:

Project Name:

Project Number:

Project Manager:

Drawing Type: Some drawings may be only available as a PDF file and may NOT be available as an AutoCAD file.

☐ PDF Files (\$50 per request)

☐ AutoCAD type files (\$50 per file)

For PDF files:

List each Drawing # Requested – If requesting entire set note “All”.

For AutoCAD files:

Number of drawing files

List each Drawing # Requested

Contractor Signature _____



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☐ PDF Files

☐ AutoCAD type files

For PDF files:

List each Drawing # Requested – If requesting entire set note “All”.

For AutoCAD files:

Number of drawing files

List each Drawing # Requested

Contractor Signature _____



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Fax (607) 277-1410

Terms of Electronic File Transfer (TOFT)

.....

The purpose of this document is to establish the terms of use and liability related to the electronic transfer of files from Tetra Tech Engineers, Architects & Landscape Architects, P.C. d/b/a Tetra Tech Architects & Engineers (hereinafter "Tetra Tech") to the Recipient (designated below). This Agreement covers all electronic files transmitted to the Recipient, associated with the Project(s) listed below, that are not otherwise covered by a contractual agreement to provide such files.

Project(s) & Project #s: _____

Recipient of Electronic Files:

Company Name: _____
Company Address: _____

Terms of Electronic File Transfer:

1. The electronic files (Files) furnished by Tetra Tech to the person or entity receiving the Files (Recipient) are provided only for the convenience of the Recipient, and only for its sole use. RECIPIENT AGREES THAT, BY OPENING THE PACKAGE CONTAINING THE FILES, RECIPIENT SHALL BE BOUND BY AND SUBJECT TO THE TERMS OF THIS DISCLAIMER.
2. Recipient recognizes that the Files may not be adequate or appropriate for Recipient's needs. In the case of any defects in the Files or any discrepancies between the Files and the hardcopy of the Files bearing the seal of Tetra Tech's professional registrant (if applicable), the sealed hardcopy shall govern. Recipient accepts the Files on an "as-is" basis, with any and all faults. There are no express warranties made by Tetra Tech with respect to the Files, and any implied warranties are excluded.
3. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. Tetra Tech assumes no responsibility for the accuracy or completeness of the Files, and any use or reuse of such electronic data for any purpose shall be at the Recipient's sole risk.
4. Furthermore, in consideration of the use of the electronic data and the Files, Recipient agrees, to the fullest extent permitted by law, to defend (by legal counsel selected by Tetra Tech), indemnify, and hold Tetra Tech harmless from any and all claims, damages, losses, costs, and expenses, including attorney's fees and court costs (including the costs of any appeals) arising out of or resulting from Recipient's use, reuse, or use by others, regardless of whether such claims, damages, losses, costs, and expenses are caused in whole or in part by Tetra Tech. The duty to defend, indemnify, and hold Tetra Tech harmless shall apply regardless of whether such claims, damages, losses, costs, and expenses arise out of causes of action for tort, including negligence, contract, warranty, or strict liability.
5. The Recipient agrees to the following use restrictions of the electronic files:
 - a. The use of these files is limited only to the operation and maintenance of the above referenced project(s).
6. By signing below, the Recipient accepts full responsibility for the use of all electronic files received from and/or produced by Tetra Tech for the Project(s) listed above and any documents, instructions, or otherwise produced there from by the Recipient along with all Terms of Electronic Transfer indicated herein. A copy of this Agreement, executed by Tetra Tech, will be provided before or with the first electronic file transmittal.

Signature

Type or Print Name

Title

Date

SECTION 01 32 00 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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. Contractor's construction schedule.
 - 2. Reports.

1.3 INFORMATIONAL SUBMITTALS

- A. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period. Follow format outlined in attachment at end of this Section.
- B. Site Condition Reports: Submit at time of discovery of differing conditions.
- C. Special Reports: Submit at time of unusual event.

1.4 COORDINATION

- A. Secure time commitments for performing critical elements of the Work from entities involved.
- B. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for commencement of the Work to date of final completion.
- B. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

1.6 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, horizontal, Gantt-chart-type, Contractor's construction schedule per requirements of Division 01 Section "Multiple Contract Project Summary – Project Schedule".
 - 1. Format: Refer to accompanying "Format for Construction Schedule".

- B. Preparation: Indicate each significant construction activity separately, by Specification Section, coordinated with the schedule of values. Provide line item(s) for each Specification Section.
- C. Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities.
- D. Distribution: Distribute copies of approved schedule to Architect, Construction Manager, Owner, separate contractors, testing and inspecting agencies, and other parties with a need-to-know schedule responsibility.
 - 1. When revisions are made, distribute updated schedules to the same parties.

1.7 REPORTS

- A. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- B. Special 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, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

Attachment: Format for Construction Schedule

END OF SECTION 01 32 00

FORMAT FOR CONSTRUCTION SCHEDULE

Technical drawing of a construction progress schedule form. The drawing includes dimensions and annotations for the form's layout.

Dimensions and Annotations:

- Top horizontal dimension: 17"
- Top right corner dimension: 10"
- Top right corner dimension: 1/2"
- Top left corner dimension: 1/2" TYP.
- Top left corner dimension: 1"
- Top left corner dimension: 1"
- Top left corner dimension: 4"
- Top left corner dimension: 1" MIN.
- Left vertical dimension: 11"
- Left vertical dimension: 7"
- Left vertical dimension: 1/4" MIN.
- Left vertical dimension: 1/2"
- Left vertical dimension: 1"

Form Layout:

- CONSTRUCTION PROGRESS SCHEDULE** (Title)
- PROJECT NAME** (Field)
- CONTRACT FOR:** (Field)
- CONTRACT START:** (Field)
- COMPLETION:** (Field)
- SECTION NUMBER** (Field)
- DESCRIPTION / ITEM** (Field)
- DATE MONTH** (Field)
- LEGEND** (Field)
- prepared by** (Field)
- date** (Field)
- approved by** (Field)
- revision date** (Field)

LETTERING HEIGHT : 1/8" MINIMUM

Format

Provide separate bar for each item in sequential order from beginning of Project to completion with the following information included for each item:

- Related Technical Specification number.
Distinct graphic delineation, indicating area of building where schedule item is located.
Shop drawing submittal date and required acceptance date.
Product procurement date and anticipated delivery date.
Projected start and completion dates for each item.

FORMAT FOR CONSTRUCTION SCHEDULE

Sample

Related Technical Specification number.
Distinct graphic delineation, indicating area of building where schedule item is located.
Shop drawing submittal date and required acceptance date.
Product procurement date and anticipated delivery date.
Projected start and completion dates for each item.

SECTION 01 33 00 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes requirements for the administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.
 - 1. Process designated submittals for the Project electronically through designated Electronic Submittal System. PDF files must be opened, viewed, modified and printed using Adobe Acrobat PDF software to view reviewer comments/stamps.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."
- B. As-Specified Products: Products to be incorporated into Project as specified by manufacturer name and product designation and including all options in Part 2 of technical specifications, intended to be installed as specified in Part 3 of technical specifications, and from a product category specifically identified as eligible to be considered as an "as-specified product" in the Action Submittals Article in Part 1 of technical specifications.
- C. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
- D. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.
- E. Electronic Submittal System: A method to transmit certain electronic submittals between the Contractor, Construction Manager, Architect, and Owner, using Submittal Exchange website service.
 - 1. For consistency, the standard file format will be PDF. Convert paper originals and other file formats to PDF prior to submission.
 - 2. In the event of system malfunction, process submittals in accordance with the Architect's instructions, until the system malfunction has been corrected.

3. For this Project, process the following submittal types through the designated electronic submittal system:
 - a. Product Data.
 - b. Sustainable Design Submittals.
 - c. Shop Drawings.
 - d. Product Schedules.
 - e. Qualification Data.
 - f. Certificates (Welding, Installer, Manufacturer, Product, and Material, as applicable).
 - g. Test Reports (Material, Product, Preconstruction, Compatibility, and Field, as applicable).
 - h. Research Reports.
 - i. Warranty (sample).
 - j. Design Data, including calculations.
 - k. Coordination Drawings.
 - l. Delegated-Design Services Certifications.
4. For Samples, provide electronic submittal of Sample cover sheet, identifying location and actual delivery date of Samples. Deliver Samples to location (Architect's office, Project site, etc.) as directed by the Architect.

1.4 COLOR SCHEDULE

- A. Color Schedule: Within 30 days after date of Notice of Award, submit a complete list of proposed manufacturers and complete product designations (i.e. model, grade, series, product line, etc.) for each item requiring color selection by Architect.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. 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. Where indicated, submit all submittal items required for each Specification Section concurrently.
 3. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- B. Processing Time: Allow sufficient time for submittal review, including time for resubmittals. 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.
- C. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:
1. Include a cover sheet on each submittal item for identification. Do not combine different submittals under same cover sheet; only one submittal is to be provided per email.
 - a. Cover Sheet Form: Use PDF version of sample form included in Project Manual. Complete each item on form, sign and date. Architect will furnish PDF version of sample form.
 2. Name submittal file as directed by Architect.
 3. Transmit each submittal via Electronic Submittal System.
 4. Transmit each submittal to Architect using the Submittal Exchange website www.submittalexchange.com.
- D. Resubmittals: Make resubmittals in same form and, for non-electronic submittals, in the same number of copies as initial submittal.
1. Note date and content of revision in label or title block and clearly indicate extent of revision.
 2. Resubmit submittals until they are marked with approval notation from Architect and Construction Manager.
 3. Refer to the General Conditions for provisions allowing Owner to obtain reimbursement from the Contractor for amounts paid to the Architect for evaluation of certain resubmittals.
- E. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- F. Use for Construction: Retain complete electronic copies of submittals on Project site during Construction. Also maintain one complete set of hard paper copies of all approved submittals on Project site during Construction. Use only final action submittals that are marked with approval notation from Architect and Construction Manager.
- G. Use of As-Specified Verification Form: The As-Specified Verification Form is intended to reduce certain action submittal paperwork for select products to be incorporated into the Work. If product to be incorporated into Project is specified by name and product designation in Part 2 of the Technical Specification Section and is from a product category specifically identified as eligible to be considered as an “as-specified product” in the Action Submittals Article in Part 1 of technical specifications, submit **“As-Specified Verification Form”** attached to this Specification Section.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. All products provided for use in construction of this Project are to be free of asbestos. Refer to Division 01 Section "Closeout Procedures" for certification required to be provided. The Owner may provide random testing of installed products/ construction for asbestos content. Any Contractor-installed product found to contain asbestos shall be classified as defective work. Defective work shall be corrected by the Contractor as specified in the General Conditions.

1.7 SUBMITTAL PROCEDURES, GENERAL

- A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1.8 ELECTRONIC SUBMITTAL REQUIREMENTS

- A. Use the designated electronic submittal system for submittals in this Article.
 - 1. Review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.
 - 2. Transmit each submittal to Construction Manager and Architect using the Submittal Exchange website, www.submittalexchange.com.
 - 3. For Action Submittals, Architect / Engineer and Construction Manager review comments will be made available on the Submittal Exchange website for downloading. Contractor will receive email notice of completed review.
 - 4. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
 - 5. After award of contract, training will be provided by Submittal Exchange regarding use of website and PDF submittals. Contact Submittal Exchange at 1-800-714-0024.
 - 6. Internet Service and Equipment Requirements:
 - a. Email address and Internet access at Contractor's main office.
 - b. Adobe Acrobat (www.adobe.com), for applying electronic stamps and comments.
 - 7. Contractor shall bear the cost of the Submittal Exchange project subscription.
 - 8. Retain one electronic copy of all approved submittals, as part of the project records required at Project Closeout.
 - 9. Tetra Tech Architects and Engineers will be the Submittal Exchange Project Leader and Subscriber.

- B. **Product Data:** Collect information into a single submittal for each element of construction and type of product or equipment.
1. Mark submittal to show which products and options are applicable.
 2. Include the following information, as applicable:
 - a. Manufacturer's catalog cuts.
 - b. Statement of compliance with specified referenced standards.
 - c. Testing by recognized testing agency.
 3. For equipment, include the following in addition to the above, as applicable:
 - a. Printed performance curves.
 - b. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
- C. **As-Specified Submittals:** Complete the **“As-Specified Verification Form”**.
1. Refer to the Action Submittals Article of technical specification sections. If the product to be incorporated into the Project is an “as-specified product” as defined in this Section, then submit **“As-Specified Verification Form”** in lieu of Product Data, otherwise submit full Product Data.
 2. Do not use **“As-Specified Verification Form”** unless specifically indicated in technical specification.
 3. The **“As-Specified Verification Form”** alone serves as the submittal for the specific product and no additional action submittal data is due at the time of the submittal. The full specific product technical data, however, is required to be included in the Operation and Maintenance Manual. Comply with requirements specified in Division 01 Section “Operation and Maintenance Data”.
- D. **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 dimensions established by field measurement.
 - e. Relationship and attachment to adjoining construction clearly indicated.
 - f. Seal and signature of professional engineer if specified.
- E. **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.
- F. 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.
- G. Certificates:
1. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS or ASME forms as applicable. Include names of firms and personnel certified.
 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. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
 5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- H. Test Reports:
1. 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.
 2. 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.
 3. 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.
 4. 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 primers and substrate preparation needed for adhesion.

5. 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.
- I. 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.
- J. Warranty: Submit sample warranties as required in individual Specification Sections.
- K. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- L. Coordination Drawing Submittals: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- M. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit certificate, signed and sealed by the responsible professional engineer, for each product and system specifically assigned to Contractor to be designed or certified by a professional engineer, indicating compliance with building code in effect for Project.
 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.

1.9 SUBMITTAL REQUIREMENTS FOR COMMISSIONING

- A. Provide the Commissioning Authority with a copy of all submittals for equipment to be commissioned.
 1. The Commissioning Authority will review and approve Contractor submittals applicable to systems being commissioned for compliance with commissioning needs, concurrent with the Architect's review.
- B. Data for Commissioning:
 1. Refer to the technical Division Commissioning Section for listing of systems to be commissioned. Provide specific information needed about each piece of commissioned equipment or system in submittal as required to facilitate commissioning. Typically this will include detailed manufacturer installation and start-up, operating, troubleshooting and maintenance procedures, full details of any Owner-contracted tests, fan and pump curves, full factory testing reports, if any, and full warranty information, including all responsibilities of the Owner to keep the warranty in force clearly identified. In addition, the installation and checkout materials that are actually shipped inside the equipment and the actual field checkout sheet forms to be used by the factory or field technicians for pre-functional testing shall be submitted to the Commissioning Authority.

2. The Commissioning Authority may request further documentation necessary for the commissioning process. This data request may be made prior to submittals, during review, or subsequently as additional requirements become evident.
 3. Much of this information is contained in the regular Operation and Maintenance (O&M) manual submittals normally submitted in the Project. For commissioned projects, this information is typically required prior to the regular formal O&M manual submittals and will be duplicated therein, facilitating the later creation of the O&M manual.
- C. Contractor's responsibility for deviations in submittals from requirements of the Contract Documents is not relieved by the Commissioning Authority's review .

1.10 NON-ELECTRONIC SUBMITTAL REQUIREMENTS

- A. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of applicable Specification Section.
 3. 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.
 4. 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 two full sets of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Deliver one set to Architect's office, deliver the other set to the construction trailer at the job site.
 5. 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 two sets of Samples. Deliver one set to Architect's office, deliver the other set to the construction trailer at the job site.
 - 1) 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.
- B. 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. Submit subcontract list in the following format:
 - a. Number of Copies: Four paper copies of subcontractor list, unless otherwise indicated. Architect will return one copy.
- C. List of Key Personnel Names: No later than 15 days after date of Notice of Award, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site.
 - 1. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including emergency, office, and cellular telephone numbers and email addresses.
 - a. Number of Copies: Four paper copies of key personnel list, unless otherwise indicated.

1.11 MISCELLANEOUS SUBMITTAL REQUIREMENTS

- A. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Closeout Procedures."
- B. Maintenance Data: Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

1.12 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.

1.13 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. Identify any deviations from Contract Document requirements. Mark cover sheet with approval before submitting to Architect and Construction Manager.
 - 1. Sign and date statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.
 - 2. If using Adobe Acrobat to electronically sign the Submittal Cover Sheet do not use the Certify Sign, Time Stamp feature as this will lock the document for further editing.

1.14 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

- A. General: Architect and Construction Manager will not review submittals that do not bear Contractor's approval and will return them without action.
- B. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect and Construction Manager will mark submittal appropriately to indicate action, as follows:
 - 1. Final Unrestricted Release: Where the submittal is marked "Approved," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
 - 2. Final-but-Restricted Release: Where the submittal is marked "Approved As Noted," the Work covered by the submittal may proceed provided it complies both with Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.
 - 3. Rejected: Where the submittal is marked "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
 - 4. Incomplete - Resubmit: Where the submittal is marked "Incomplete, Submit Additional Information," do not proceed with the Work covered by the submittal. Prepare additional information requested, or required by the Contract Documents, that indicates compliance with requirements, and resubmit.
- C. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it, or will return it if it does not comply with requirements.
- D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Limit information submitted to specific products indicated. Do not submit extraneous matter. Submittals containing excessive extraneous matter will be returned for resubmittal without review.

- F. Submittals not required by the Contract Documents may be returned by the Architect without action.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

Attachments: Tt Cover Sheet
 As-Specified Verification Form
 Tt Cover Sheet for Closeout Submittals (Sections 01 78 23 and 01 78 39)
 Consultant Name Cover Sheet to be used ONLY for Submittals for Sections(s)
 Delegated Design Submittal Form (Refer to Sections)

END OF SECTION 01 33 00

CONTRACTOR: _____

SUBMITTAL DATE ____ / ____ / ____

Check following as applicable:

ARCHITECT: Tetra Tech Architects & Engineers

☐ First Submission

PROJECT IDENTIFICATION

☐ Re-Submission No. ____

Architect's
Project No.: 276721-23001

Proj. Name: Lakeland CSD – 2023 Capital Project Phase 1

Location: Shrub Oak, New York

PRODUCT IDENTIFICATION

Specification Section No. _____

Name of Product: _____

Name of Manufacturer: _____

SUBCONTRACTOR

SUPPLIER

RELATIONSHIP TO STRUCTURE

Building
Name _____

(Room #) (Room Name)

Contract Drawing No.: _____

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

☐ Approved

☐ Approved As Noted

☐ Rejected

☐ Incomplete, Submit Additional Information

INFORMATIONAL SUBMITTAL:

☐ No Action Taken

☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

DEVIATION FROM CONTRACT DOCUMENTS: _____

CONTRACTOR COMMENTS: _____

ARCHITECT'S COMMENTS: _____

CONTRACTOR'S STAMP

CONTRACTOR'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCTS/MATERIALS ARE FREE OF ASBESTOS AS REQUIRED BY THE CONTRACT DOCUMENTS.

BY _____

CONSTRUCTION MANAGER'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONSTRUCTION MANAGER IN ACCORDANCE WITH THE GENERAL CONDITIONS.

BY _____

CM Submittal No. _____



TETRA TECH
ARCHITECTS & ENGINEERS

As-Specified Verification Form

Project Number: 276721-23001

Project Title: Lakeland CSD – 2023 Capital Project Phase 1

Technical
Specification Section: _____
(Include Section Number and Title as shown in Project Manual)

Specified Product: _____
(Include manufacturer's name and product designation)

The undersigned, hereinafter called the Contractor, hereby warrants that the Specified Product listed above will be incorporated into the Project in accordance with requirements specified in the Technical Specification Section identified above without modification or alteration.

By acceptance of this form, Tetra Tech Architects & Engineers (hereinafter called Tetra Tech), agrees that limited submittals identified in the Technical Specification Section identified above are not required, unless otherwise stated in the Submittals article in the Technical Specification Section.

The Contractor is advised that use of this As-Specified Verification Form does not relieve the Contractor from providing remaining submittal documentation required in Technical Specification sections and all information required in Division 1 Closeout section of the Project Manual or from complying with requirements of the General Conditions.

Products/Materials are free of asbestos as required by the Contract Documents.

(Name of Contractor)

(Authorized Signature)

(Title of Signatory)

(Date)

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

- ☐ Approved / Approved As Noted
☐ Rejected

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

ARCHITECT'S COMMENTS: _____

CONTRACTOR: _____

SUBMITTAL DATE ____ / ____ / ____

Check following as applicable:

☐ First Submission ____

☐ Re-Submission No. ____

ARCHITECT: Tetra Tech Architects & Engineers

PROJECT IDENTIFICATION

Architect's
Project No.: 276721-23001

Proj. Name: Lakeland CSD – 2023 Capital Project Phase 1

Location: Shrub Oak, New York

PRODUCT IDENTIFICATION

Specification Section No. **01 78 23 OR 01 78 39** (circle correct one)

Name of Product: _____

Name of Manufacturer: _____

SUBCONTRACTOR: _____

SUPPLIER: _____

RESERVED FOR USE BY TETRA TECH

INFORMATIONAL SUBMITTAL:

☐ No Action Taken

☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

DEVIATION FROM CONTRACT DOCUMENTS: _____

CONTRACTOR COMMENTS: _____

CONSTRUCTION MANAGER'S COMMENTS: _____

ARCHITECT'S COMMENTS: _____

CONTRACTOR'S STAMP

CONTRACTOR'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCTS/MATERIALS ARE FREE OF ASBESTOS AS REQUIRED BY THE CONTRACT DOCUMENTS.

BY _____

CONSTRUCTION MANAGER'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED BY THE CONSTRUCTION MANAGER IN ACCORDANCE WITH THE GENERAL CONDITIONS. AND IN ACCORDANCE WITH THE CONSTRUCTION MANAGER'S CONTRACTUAL OBLIGATIONS WITH THE OWNER.

Approved _____ Rejected _____

BY _____

CM Submittal No. _____

CONTRACTOR: _____

SUBMITTAL DATE ____ / ____ / ____

Check following as applicable:

CONSULTANT: _____

☐ First Submission ____

☐ Re-Submission No. ____

PROJECT IDENTIFICATION

Project No.: 276721-23001

Proj. Name: Lakeland CSD – 2023 Capital Project Phase 1

Location: Shrub Oak, New York

PRODUCT IDENTIFICATION

Specification Section No. _____

Name of Product: _____

Name of Manufacturer: _____

SUBCONTRACTOR:

SUPPLIER:

RELATIONSHIP TO STRUCTURE:

Building Name: _____

(Room #)

(Room Name)

Contract Drawing No.: _____

DEVIATION FROM CONTRACT DOCUMENTS:

CONTRACTOR COMMENTS:

OWNER'S CONSULTANT COMMENTS:

CONTRACTOR'S STAMP

CONTRACTOR'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL CONDITIONS. PRODUCTS/MATERIALS ARE FREE OF ASBESTOS AS REQUIRED BY THE CONTRACT DOCUMENTS.

BY _____

CONSTRUCTION MANAGER'S CERTIFICATION

I CERTIFY THAT THIS SUBMITTAL HAS BEEN REVIEWED AND APPROVED BY THE CONSTRUCTION MANAGER IN ACCORDANCE WITH THE GENERAL CONDITIONS.

BY _____

CM Submittal No. _____

OWNER'S DIRECT CONSULTANT

ACTION SUBMITTAL:

- ☐ Approved
- ☐ Approved As Noted
- ☐ Rejected
- ☐ Incomplete, Submit Additional Information

INFORMATIONAL SUBMITTAL:

- ☐ No Action Taken
- ☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

DELEGATED DESIGN SUBMITTAL

CONTRACTOR: _____

SUBMITTAL DATE ____ / ____ / ____

DESIGN PROFESSIONAL: _____

Check following as applicable:

ARCHITECT: Tetra Tech Architects & Engineers

☐ First Submission

PROJECT IDENTIFICATION

☐ Re-Submission No. ____

Architect's
Project No.: 276721-23001
Proj. Name: Lakeland CSD – 2023 Capital Project Phase 1
Location: Shrub Oak, New York

PRODUCT IDENTIFICATION

Specification Section No. _____

Name of Product: _____

Name of Manufacturer: _____

SUBCONTRACTOR

SUPPLIER

RELATIONSHIP TO STRUCTURE

Building
Name _____
(Room #) _____ (Room Name) _____

Contract Drawing No.: _____

DEVIATION FROM CONTRACT DOCUMENTS:

DESIGN PROFESSIONAL'S COMMENTS:

CONTRACTOR COMMENTS:

ARCHITECT'S COMMENTS:

CONSTRUCTION MANAGER'S CERTIFICATION

I certify that this submittal has been reviewed and approved by the Construction Manager in accordance with the General Conditions.

BY _____

CM Submittal No. _____

CONTRACTOR'S STAMP

DESIGN PROFESSIONAL'S CERTIFICATION

I certify that I am a design professional currently licensed in New York State and confirm my responsibility for work included in this submittal in accordance with the General Conditions. Further, I certify that to the best of my knowledge, information and belief, the plans and specifications are in accordance with applicable requirements of the New York State Uniform Fire Prevention and Building Code, the State Energy Conservation Construction Code and construction standards of the Education Department.

BY _____

CONTRACTOR'S CERTIFICATION

I certify that this submittal has been reviewed and approved by the Contractor in accordance with the General Conditions. Products/Materials Are free of asbestos as required by the Contract Documents.

BY _____

RESERVED FOR USE BY TETRA TECH

ACTION SUBMITTAL:

- ☐ Approved
- ☐ Approved As Noted
- ☐ Rejected
- ☐ Incomplete, Submit Additional Information

INFORMATIONAL SUBMITTAL:

- ☐ No Action Taken
- ☐ Returned for Resubmittal

Reviewed By: _____

Date: _____

Reviewed only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. Review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures.

SECTION 01 35 26 – GOVERNMENTAL SAFETY REQUIREMENTS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Safety requirements included in 8 NYCRR 155.5 Uniform Safety Standards for School Construction and Maintenance Projects.

1.3 PERFORMANCE REQUIREMENTS

- A. General Performance: Provide all measures, including (but not limited to) materials, equipment, and procedures, required to comply with following requirements of 8 NYCRR 155.5 Uniform Safety Standards for School Construction and Maintenance Projects.
- B. Certificate of Occupancy:
 - 1. 8 NYCRR 155.5 (a): “The occupied portion of any school building shall always comply with the minimum requirements necessary to maintain a certificate of occupancy.”
- C. General Safety and Security Standards for Construction Projects:
 - 1. 8 NYCRR 155.5 (e)(1): “All construction materials shall be stored in a safe and secure manner.”
 - 2. 8 NYCRR 155.5 (e)(2): “Fences around construction supplies or debris shall be maintained.”
 - 3. 8 NYCRR 155.5 (e)(3): “Gates shall always be locked unless a worker is in attendance to prevent unauthorized entry.”
 - 4. 8 NYCRR 155.5 (e)(4): “During exterior renovation work, overhead protection shall be provided for any sidewalks or areas immediately beneath the work site or such areas shall be fenced off and provided with warning signs to prevent entry.”
 - 5. 8 NYCRR 155.5 (e)(5): “Workers shall be required to wear photo identification badges at all times for identification and security purposes while working at occupied sites.”

D. Separation of Construction Areas from Occupied Spaces:

1. 8 NYCRR 155.5 (f): “Construction areas which are under the control of a contractor and therefore not occupied by district staff or students shall be separated from occupied areas. Provisions shall be made to prevent the passage of dust and contaminants into occupied parts of the building. Periodic inspection and repairs of the containment barriers must be made to prevent exposure to dust or contaminants. Gypsum board must be used in exit ways or other areas that require fire rated separation. Heavy duty plastic sheeting may be used only for a vapor, fine dust or air infiltration barrier, and shall not be used to separate occupied spaces from construction areas.”
2. 8 NYCRR 155.5 (f)(1): “A specific stairwell and/or elevator should be assigned for construction worker use during work hours. In general, workers may not use corridors, stairs or elevators designated for students or school staff.”

E. Cleaning Occupied Areas:

1. 8 NYCRR 155.5 (f)(2): “Large amounts of debris must be removed by using enclosed chutes or a similar sealed system. There shall be no movement of debris through halls of occupied spaces of the building. No material shall be dropped or thrown outside the walls of the building.”
2. 8 NYCRR 155.5 (f)(3): “All occupied parts of the building affected by renovation activity shall be cleaned at the close of each workday. School buildings occupied during a construction project shall maintain required health, safety and educational capabilities at all times that classes are in session.”

F. Exiting and Ventilation:

1. 8 NYCRR 155.5(g): Maintain exiting and ventilation during school construction projects.
2. 8 NYCRR 155.5(g)(1): “Required exits, temporary stairs, ramps, exit signs, and door hardware shall be provided at all times.”
3. 8 NYCRR 155.5(g)(2): “Required ventilation to occupied spaces affected by construction will be maintained during the project.”

G. Noise Control:

1. 8 NYCRR 155.5 (i): “Construction and maintenance operations shall not produce noise in excess of 60 dba in occupied spaces or shall be scheduled for times when the building or affected building spaces are not occupied or acoustical abatement measures shall be taken.”

H. Control of Fumes, Gases and Contaminants:

1. 8 NYCRR 155.5 (j): The contractor shall be responsible for the control of chemical fumes, gases, and other contaminants produced by welding, gasoline or diesel engines, roofing, paving, painting, and other fumes to ensure they do not enter occupied portions of the building or air intakes.

I. “Off-Gassing” of Volatile Organic Compounds:

1. 8 NYCRR 155.5 (j)(1): The contractor shall be responsible to ensure that activities and materials which result in "off-gassing" of volatile organic compounds such as glues, paint, furniture, carpeting, wall coverings, drapery, etc. are scheduled, cured or ventilated in accordance with manufacturer’s recommendations before a space can be occupied.

J. Asbestos Isolation:

1. 8 NYCRR 155.5 (k): “Large and small asbestos abatement projects as defined by 12 NYCRR 56 shall not be performed while the building is occupied.” Note, it is NYSED’s interpretation that the term "building", as referenced in this section of 8 NYCRR 155.5, means a wing or major section of a building that can be completely isolated from the rest of the building with sealed non-combustible construction. The isolated portion of the building must contain exits that do not pass through the occupied portion and ventilation systems must be physically separated and sealed at the isolation barrier.
2. Exterior work such as roofing, flashing, siding, or soffit work may be performed on occupied buildings provided proper variances are in place as required, and complete isolation of ventilation systems and at windows is provided. Care must be taken to schedule work so that classes are not disrupted by noise or visual distraction.

K. Lead and Asbestos Testing:

1. 8 NYCRR 155.5 (c)(1): “All school areas to be disturbed during renovation or demolition shall be tested for lead and asbestos.”
 - a. Asbestos and Asbestos-Containing Materials:
 - 1) Be advised that asbestos and asbestos-containing materials are required to be abated as part of this Project. Refer to Division 02 Section “Asbestos Abatement”.
 - a) The extent of asbestos to be abated as part of the Project is indicated on Drawings included in the Contract Documents.
 - b) Prior to beginning Work, review Owner’s “Asbestos Management Plan” to ensure asbestos or asbestos-containing materials identified in that document are not disturbed.
 - 2) Be advised that if materials suspected to be asbestos, or to contain asbestos, that are not included in the Project and not identified in the Contract Documents are encountered during construction, immediately notify Owner and take precautions as required to avoid disturbing materials until directed by Owner.

- 3) Transmission Electron Microscopy (TEM): All asbestos abatement work that requires clearance air sampling in accordance with New York State Industrial Code Rule 56 shall have clearance air samples collected and analyzed using Transmission Electron Microscopy as per the Asbestos Hazard Emergency Response Act (40 CFR 763). Refer to Division 02 Section "Asbestos Abatement".

b. Lead and Lead-Containing Materials:

- 1) Be advised that a lead inspection has been performed as required by New York State Education Department and a copy of the lead inspection report is available at the Owner's offices.

L. Code Rule 56:

1. 8 NYCRR 155.5(k): "All asbestos abatement projects shall comply with all applicable Federal and State laws including but not limited to the New York State Department of Labor industrial code rule 56 (12 NYCRR 56), and the Federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR part 763 (Code of Federal Regulations, 1998 Edition, Superintendent of Public Documents, U.S. Government Printing Office, Washington, DC 20402; 1998; available at the Office of Facilities Planning, Education Building Annex, Room 360, State Education Department, Albany, NY 12234."

M. Lead:

1. 8 NYCRR 155.5 (l): Surfaces that will be disturbed by reconstruction must have a determination made as to the presence of lead. Projects which disturb surfaces that contain lead shall have in the specifications a plan prepared by a certified Lead Risk Assessor or Supervisor which details provisions for occupant protection, worksite preparation, work methods, cleaning and clearance testing which are in general accordance with the HUD Guidelines.
 - a. Be advised that disturbance of lead and lead-containing materials is not anticipated as part of this Project.
 - b. Contractor is responsible for complying with requirements of all applicable federal, state and local regulations, including (but not limited to) OSHA Lead in Construction Standard 29 CFR 1926.62, when construction activities involve disturbance of materials containing 1.0 mg/sq cm or 0.5 percent of lead or less, including (but not limited to) lead-based paint, ceramic tile, and similar materials.
 - c. If materials suspected to contain lead above 1.0 mg/sq cm or above 0.5 percent that are not included in Project or identified in Contract Documents are encountered during construction, immediately notify Owner and take applicable precautions to avoid disturbing materials until directed by Owner.

N. Disposal of Lead Abatement Waste:

1. Test all debris from lead abatement activities to determine whether it is hazardous or non-hazardous waste.

2. Transport and dispose of debris determined to be hazardous waste in accordance with applicable regulations.
3. Package, label, and mark all hazardous waste materials in accordance with applicable requirements of 49 CFR 173, 178 and 179.
4. Maintain hazardous waste manifest from date of transport until date of disposal, destruction or recycling.
5. Return fully executed hazardous waste manifests to Owner within 60 days after date waste accepted by initial transporter.
6. Dispose of material determined to be Construction and Demolition Debris in accordance with 6 NYCRR 360 and 364. Provide trip tickets or other documentation clearly identifying generating site, Owner, transporter, disposal site and amount of material removed from site, transported to and disposed of at disposal site.
7. Refer to Division 02 Section "Lead-Safe Work Practices" for additional requirements.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 35 26

SECTION 01 40 00 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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 -control services required by Architect, Owner, Construction Manager, or authorities having jurisdiction are not limited by provisions of this Section.

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 (5) 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. 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.
- C. 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."
- D. 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.

- E. 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 or Construction Manager.

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.

1.5 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification 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. 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.

1.7 INFORMATIONAL SUBMITTALS

- A. 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.
- B. Schedule of 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.
- C. Reports: Prepare and submit certified written reports and documents as specified.
- D. 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 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.

1.9 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 an appropriately licensed design professional legally qualified to practice in New York State 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. 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.
- G. 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.

- H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, correct, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. 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 or Construction Manager.
 - 3. Notify Architect and Construction Manager seven (7) 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 and Construction Manager's approval of mockups before starting corresponding Work, fabrication, or construction.
 - 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 when directed unless otherwise indicated.

1.10 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.
 - a. For testing or inspecting services indicated as Owner's responsibility, notify Owner and testing agency at least 3 business days in advance of time when Work that requires testing or inspecting 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, Commissioning Authority, Construction Manager, and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect, Commissioning Authority, Construction Manager, 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 Division 01 Section "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. Preliminary design mix proposed for use for material mixes that require control by testing agency.
 - 6. 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 Tests and Inspections:** Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. 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, Commissioning Authority, Construction Manager, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

1.11 SPECIAL TESTS AND INSPECTIONS

- A. **Special Tests and Inspections:** Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, as indicated in the Statement of Special Inspections attached to this Section, 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, Commissioning Authority, Construction Manager, 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 and Commissioning Authority, through Construction Manager, 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.

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, Commissioning Authority's, and Construction Manager's reference during normal working hours.

3.2 CORRECTION AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, correct 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 Division 01 Section "Execution."
- B. Protect construction exposed by or for quality-control service activities.

- C. Correction and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

Attachment: Statement of Special Inspections

END OF SECTION 01 40 00



TETRA TECH
ARCHITECTS & ENGINEERS

STATEMENT OF SPECIAL INSPECTIONS

Project: *LAKELAND CSD – 2023 CAPITAL PROJECT – Phase 1*

Location: *Shrub Oak, New York*

Owner: *LAKELAND CENTRAL SCHOOL DISTRICT*

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code of New York State. It includes a schedule of Special Inspection services applicable to this project. *Refer to individual technical specification sections for additional testing requirements.*

This document includes the following parts:

Qualifications of Inspectors and Testing Technicians

Schedule of Special Inspection Services

Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility (Attached to this Section.)

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Qualifications* on the Schedule.

PE	Structural Engineer – a licensed PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Association of the Wall and Ceilings Industries International (AWCI)

AWCI 12-B	Standard Practice for the Testing and Inspection of Field Applied Thin-Film Intumescent Fire-Resistive Materials; an Annotated Guide.

Schedule of Special Inspection Services

INSPECTION AND TESTING <i>("Continuous" & "Periodic" defined by the Code; refer to applicable Technical Specification Section for specific frequency requirements)</i>	REQUIRED <i>(Required if checked; Not Applicable if not checked)</i>	TECHNICAL SPECIFICATION SECTION <i>(Refer to for additional information)</i>	CONTINUOUS	PERIODIC
Cast-in-Place Concrete (1705.3)				
1. Inspection of reinforcing steel and verify placement	☒	03 30 00	☐	☒
2. Inspection of reinforcing steel welding:				
a. Verification of ASTM A706 material	☐	03 30 00	☐	☒
b. Inspect single-pass fillet welds, maximum 5/16"	☐	03 30 00	☐	☒
c. Inspect all other welds	☐	03 30 00	☒	☐
3. Inspection of anchors to be installed in concrete prior to and during placement	☒	03 30 00	☒	☐
4. Inspect anchors post-installed in hardened concrete				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	☐	03 30 00	☒	☐
b. Mechanical anchors and adhesive anchors not defined in 4a.	☒	03 30 00	☐	☒
5. Verify use of required design mix	☒	03 30 00	☐	☒
6. Sampling fresh concrete for fabricating specimens for strength testing, perform slump and air content tests, and measure temperature of concrete	☒	03 30 00	☒	☐
7. Inspection of concrete and shotcrete placement for proper application techniques	☒	03 30 00	☒	☐
8. Verify maintenance of specified curing temperature and techniques	☒	03 30 00	☐	☒
9. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete, and prior to removal of shores and forms from beams and structural slabs	☒	03 30 00	☐	☒
10. Inspection of formwork for shape, location and dimensions of the concrete member being formed	☒	03 30 00	☐	☒
11. Inspection of post-tensioning operations	☐	03 38 16	☒	☐

Precast Concrete (1705.3)				
1. Inspection of reinforcing steel	☐	03 41 00	☐	☒
2. Verify use of required design mix	☐	03 41 00	☐	☒
3. Inspection of prestressed operations				
a. Application of prestressing forces	☐	03 41 00	☒	☐
b. Grouting of bonded prestressing tendons in the seismic-force-resisting system	☐	03 41 00	☒	☐
4. Sampling fresh concrete; slump, air content, temperature, strength test specimens	☐	03 41 00	☒	☐
5. Inspection of formwork for shape, location and dimensions of the concrete member being formed	☐	03 41 00	☐	☒
6. Inspection of concrete placement for proper application techniques	☐	03 41 00	☒	☐
7. Inspection for maintenance of specified curing temperature and techniques	☐	03 41 00	☐	☒
8. Erection of precast concrete members	☐	03 41 00, 03 48 10	☐	☒

Fabricated Items (1704.2.5 and 1705.10)				
1. Inspection of structural, load-bearing or lateral load-resisting members or assemblies as noted on Contract Documents that are fabricated in a fabricator's shop	☐	?? ?? ??	☐	☐
Exceptions:				
a. The fabricator has been approved to perform work without special inspections per NYSBC 1704.2.5.1.				
b. The members or assemblies are to be fabricated on site. Then refer to the respective material categories for inspections.				

Masonry (1705.4)				
Level 1	☐	04 20 00		
1. Prior to construction, verify certificates of compliance used in masonry construction	☐	04 20 00	☐	☐
Level 2 Level 3	☒ Level 2 ☐ Level 3	04 20 00		
1. Prior to construction, verify compliance with the approved submittals.	☒	04 20 00	☐	☐
2. Prior to construction, verify $f'm$, except where specifically exempted by the Code	☒	04 20 00	☐	☐
3. During construction, verify Slump flow and Visual Stability Index (VSI) when self-consolidating grout is delivered to the project site	☒	04 20 00	☐	☐
4. During construction, verify $f'm$ for every 5,000 sqft	☐	04 20 00	☐	☐
5. During construction, verify proportions of materials in premixed or preblended mortar, and grout other than self-consolidating grout, as delivered to the project site.	☐	04 20 00	☐	☐
6. At start of masonry construction, verify to ensure compliance:				
a. Proportions of site prepared mortar.	☒	04 20 00	☐	☒
b. Grade, type and size of reinforcement, connectors, and anchor bolts.	☒	04 20 00	☐	☒
c. Sample panel construction.	☒	04 20 00	☐	☒
7. Prior to grouting, verify that the following are in compliance:				
a. Grout space	☒	04 20 00	☐	☒
b. Placement of reinforcement, connectors, and anchor bolts	☒	04 20 00	☐	☒
c. Proportions of site-prepared grout	☒	04 20 00	☐	☒
8. During construction, verify compliance of the following:				
a. Materials and procedures with the approved submittals.	☒	04 20 00	☐	☒
b. Placement of masonry units and mortar joint construction.	☒	04 20 00	☐	☒
c. Size and location of structural members.	☒	04 20 00	☐	☒
d. Type, size and location of anchors including anchorage of masonry to structural members, frames or other construction	☒	04 20 00	☐	☒
e. Welding of reinforcing bars	☐	04 20 00	☒	☐
f. Preparation, construction and protection of masonry during cold or hot weather	☒	04 20 00	☐	☒
g. Placement of grout.	☒	04 20 00	☒	☐
9. Observe preparation of grout specimens, mortar specimens and/or prisms	☒	04 20 00	☐	☒

Structural Steel (1705.2.1)				
1. Minimum inspections prior to welding per AISC 360 (including but not limited to material verification, welder qualification and fit-up of joints).	☒	05 12 00	☒	☐
2. Minimum inspections during welding per AISC 360	☒	05 12 00	☒	☐
a. Placement and installation of steel headed stud anchors	☐	05 12 00	☒	☐
b. Verification of ASTM A 706 material	☐	05 12 00	☐	☒
c. Testing of resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special reinforced concrete shear walls and shear reinforcement.	☐	05 12 00	☒	☐
3. Minimum inspections after welding per AISC 360 (including but not limited to size, length and location of welds; welds meet visual acceptance criteria; and repair activities)	☒	05 12 00	☒	☐
4. Inspection of welding via UT for CJP groove welds subject to transversely applied tension loading in butt, T-, and Corner joints				
a. Risk Category III or IV structures	☒	05 12 00	☒	☐
b. Risk Category II structures	☐	05 12 00	☐	☒
5. Minimum inspections prior to high-strength bolting (except for snug-tight joints) per AISC 360 (including but not limited to material verification of high-strength bolts, nuts, and washers; and bolting procedures)	☒	05 12 00	☒	☐
6. Minimum inspections during high-strength bolting (except for snug-tight joints) per AISC 360 (included but not limited to assemblies and positioning)	☒	05 12 00		
a. For pretension/slip-critical connections using turn-of-nut with match marking method, direct-tension-indicator method, or twist-off-type tension control bolt method.	☒	05 12 00	☐	☒
b. For pretension/slip-critical connections using calibrated wrench method or turn-of-nut method without matchmarking	☒	05 12 00	☒	☐
7. Minimum inspections after high-strength bolting per AISC 360	☒	05 12 00	☐	☒
8. Inspection of fabricated and/or erected steel to verify compliance with the construction drawings.	☒	05 12 00	☐	☒
a. Details such as bracing and stiffeners	☒	05 12 00	☐	☒
b. Member locations	☒	05 12 00	☐	☒
c. Joint details	☒	05 12 00	☐	☒
9. Inspection during placement of anchor rods and other embedded items supporting structural steel for compliance with construction drawings.	☒	05 12 00	☒	☐
8. Material verification of structural steel: Identification markings to conform to ASTM standards specified in the approved construction documents	☐	05 12 00	☐	☐

Open-Web Steel Joists and Joist Girders (1705.2.3)				
1. Installation of open-web steel joists and joist girders				
a. End connections – welded or bolted per SJI	☒	05 21 00	☐	☒
b. Bridging – horizontal or diagonal				
1. Standard bridging per SJI	☒	05 21 00	☐	☒
2. Bridging that differs from SJI specification	☒	05 21 00	☐	☒

Cold-Formed Steel Deck (1705.2.2)				
1. Inspection or Execution Tasks Prior to Deck Placement per SDI QA/QC (including but not limited to compliance of materials with construction documents)	☐	05 31 00	☐	☒
2. Inspection or Execution Tasks After to Deck Placement per SDI QA/QC (including but not limited to compliance of installation with construction documents)	☐	05 31 00	☐	☒
3. Inspection or Execution Tasks Prior to Welding per SDI QA/QC (including but not limited to verification of procedures and certifications)	☐	05 31 00	☐	☒
4. Inspection or Execution Tasks During Welding per SDI QA/QC	☐	05 31 00	☒	☐
5. Inspection or Execution Tasks After Welding per SDI QA/QC (including but not limited to size, length and location of welds; welds meet visual acceptance criteria; and repair activities)	☐	05 31 00	☐	☒
6. Inspection or Execution Tasks Prior to Mechanical Fastening per SDI QA/QC (including but not limited to material verification)	☐	05 31 00	☐	☒
7. Inspection or Execution Tasks During Mechanical Fastening per SDI QA/QC (including but not limited to verification of positioning and installation)	☐	05 31 00	☒	☐
8. Inspection or Execution Tasks After Mechanical Fastening per SDI QA/QC (including but not limited to verification of spacing, type and location; repair activities)	☐	05 31 00	☐	☒

Cold-Formed Steel Trusses (1705.2.4)				
1. For trusses spanning 60 feet or greater:				
a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.	☐	05 40 00	☐	☒
b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.	☐	05 40 00	☐	☒

Wood Construction (170505)				
1. For Metal-plate connected wood trusses spanning 60 feet or greater:				
a. Verify the temporary installation restraint/bracing is installed per the approved truss submittal package.	☐	06 10 00, 06 16 00, 06 17 53	☐	☒
b. Verify the permanent individual truss member restraint/bracing is installed per the approved truss submittal package.	☐	06 10 00, 06 16 00, 06 17 53	☐	☒
2. Inspect High-load diaphragms for grade and thickness of sheathing material; nominal size of framing members; fastener diameter and length; fastener layout and spacing	☐	06 10 00	☐	☒

Exterior Insulation and Finish Systems (EIFS) (1705.16)				
Not required if water-resistive barrier is installed with a means of draining moisture to the exterior. Also not required for EIFS applications over masonry or concrete walls.	☐	07 24 13	☐	☐
1. Inspection of water-resistive batter coating when installed over a sheathing substrate.				

Sprayed Fire-resistant Materials (1705.14)				
1. Verify surface preparation in accordance with manufacturer's written instructions.	☐	07 81 00	☐	☐
2. Verify temperature and area ventilation before and after application in accordance with manufacturer's written instructions.	☐	07 81 00	☐	☐
3. Verify thickness of sprayed fire-resistant materials				
a. Minimum of 4 measurements per 1,000 sq ft of floor, roof and wall assembly areas, or part thereof at each story.	☐	07 81 00	☐	☐
b. Minimum of 25% of structural members at each story.	☐	07 81 00	☐	☐
4. Verify density of sprayed fire-resistant materials.				
a. Minimum of one sample per 2,500 sq ft of floor, roof and wall assembly areas, or part thereof at each story.	☐	07 81 00	☐	☐
b. Minimum of one sample from each type of structural framing member per 2,500 sq ft of floor area or part thereof at each story.				
5. Verify cohesive/adhesive bond strength of sprayed fire-resistant materials.				
a. Minimum of one sample per 2,500 sq ft of floor, roof and wall assembly areas or part thereof at each story.	☐	07 81 00	☐	☐
b. Minimum of one sample from each type of structural framing member per 2,500 sq ft of floor area or part thereof at each story	☐	07 81 00	☐	☐
c. Bond tests to qualify a primer, paint, or encapsulant when acceptable bond strength performance between those coatings and the fire-resistant material has not been determined.	☐	07 81 00	☐	☐

Mastic and Intumescent Fire-resistant Coatings (1705.15)				
1. Verify surface preparation, application, and thickness when applied to structural elements and decks in accordance with AWCI 12-B	☐	07 81 23	☐	☐

Fire-Resistant Penetrations and Joints (1705.17)				
1. Inspection of through-penetrations and membrane penetration firestops in buildings in Risk Category III or IV per ASTM E2174	☒	07 84 13	☐	☐
2. Inspections of fire-resistant joint systems and perimeter fire barrier systems in buildings in Risk Category III or IV per ASTM E2393	☒	07 84 43, 07 95 13.13	☐	☐

Soils (1705.6)				
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity	☒	31 20 00	☐	☒
2. Verify excavations are extended to proper depth and have reached proper material	☒	31 20 00	☐	☒
3. Perform classification and testing of compacted fill materials	☒	31 20 00	☐	☒
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill	☒	31 20 00	☒	☐
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly	☒	31 20 00	☐	☒

Driven Deep Foundations (1705.7)				
1. Verify element materials, sizes and lengths comply with the requirements	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
2. Determine capacities of test elements and conduct additional load tests, as required	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
3. Inspect driving operations and maintain complete and accurate records for each element	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☒	☐
5. For steel elements, perform additional special inspections in accordance with 1705.2	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☐	☐
6. For concrete elements and concrete-filled elements, perform additional special inspections in accordance with Section 1705.3	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☐	☐
7. For specialty elements, perform additional inspections	☐	31 62 13, 31 62 16, 31 62 19, 31 22 23	☐	☐

Cast-In-Place Deep Foundations (1705.8)				
1. Inspect drilling operations and maintain complete and accurate records for each element	☐	31 63 16, 31 63 29	☒	☐
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable), and adequate end bearing strata capacity. Record concrete or grout volumes.	☐	31 63 16, 31 63 29	☒	☐
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3	☐	31 63 16, 31 63 29	☐	☐

Helical Pile Foundations (1705.9)				
1. Inspect installation operations and maintain complete and accurate records for each pier	☐	??	☒	☐
2. Verify and record installation equipment used, pile dimensions, tip elevations, final depth, final installation torque other data as required	☐	??	☒	☐

Wind Resistance Inspections (1705.11)				
1. Structural wood – of elements in main windforce-resisting system				
a. Inspection of gluing operations.	☐	06 10 00, 06 16 00, 06 17 53	☒	☐
b. Inspection of nailing, bolting, anchoring and other fastening	☐	06 10 00, 06 16 00, 06 17 53	☐	☒
2. Cold-formed steel light-frame construction – of elements in main windforce-resisting systems.				
a. Inspection of welding operations	☐	05 40 00	☐	☒
b. Inspection of screw attachment, bolting, anchoring and other fastening	☐	05 40 00	☐	☒
3. Wind-resisting components:				
a. Inspection of roof covering, roof deck and roof framing connections	☐	05 12 00, 05 21 00, 05 31 00, 07 53 23	☐	☒
b. Inspection of exterior wall covering and wall connections to roof and floor diaphragms and framing	☐	04 20 00, 07 24 13, 08 41 13, 08 44 13	☐	☒

Seismic Resistance Inspections (1705.12)				
1. Structural steel: SDC B, C, D, E, or F – refer to 1705.12.1.1 for exceptions	☐	05 12 00	☒	☐
a. Seismic force-resisting systems – inspection in accordance with AISC 341	☐	05 12 00	☒	☐
SDC B (R>3), C (R>3), D, E, or F	☐	05 12 00	☒	☐
b. Structural steel elements - inspection in accordance with AISC 341				
SDC C, D, E, or F, refer to 1705.12.2 for exceptions				
2. Structural wood, seismic-force-resisting systems:				
a. Inspection of field gluing operations.	☐	06 10 00, 06 17 00, 06 17 53	☒	☐
b. Inspection of nailing, bolting, anchoring and other fastening	☐	06 10 00, 06 17 00, 06 17 53	☐	☒
SDC C, D, E, or F, refer to 1705.12.3 for exceptions				
3. Cold-formed steel framing - of elements in seismic-force-resisting systems				
a. Inspection of welding operations of seismic-force-resisting systems	☐	05 40 00	☐	☒
b. Inspection of screw attachment, bolting, anchoring and other fastening	☐	05 40 00	☐	☒
SDC C, D, E or F; coord with 13.2.2 of ASCE 7	☐	??	☐	☒
4. Designated seismic systems – Inspection systems requiring Seismic Qualification per ASCE 7. Verify label, anchorage and mounting conforms to certificate of compliance				
5. Architectural components				
a. Inspection of erection and fastening of exterior cladding	☐		☐	☒
b. Inspection of erection and fastening of interior and exterior nonbearing walls	☐		☐	☒
c. Inspection of erection and fastening of interior and exterior veneer	☐		☐	☒
d. Access floors – inspection of anchorage	☐		☐	☒
6. Mechanical and electrical components:				
SDC C, D, E or F			☐	☒
a. Inspection of anchorage of electrical equipment for emergency power systems	☐		☐	☒
SDC E or F	☐		☐	☒
b. Inspection of anchorage installation or other electrical equipment	☐		☐	☒
SDC C, D, E or F	☐		☐	☒
c. Inspection of installation and anchorage of piping systems and associated mechanical units designed to carry hazardous materials	☐		☐	☒
SDC C, D, E, or F	☐		☐	☒
d. Inspection of installation and anchorage of ductwork designed to carry hazardous materials	☐		☐	☒
SDC, C, D, E, or F	☐		☐	☒
e. Inspection of installation and anchorage of vibration isolation systems	☐		☐	☒
SDC, C, D, E, or F	☐		☐	☒
f. Inspection of installation of mechanical and electrical equipment where automatic fire sprinkler systems are installed to verify clearances	☐		☐	☒

SDC B, C, D, E or F 7. Seismic isolation system: Inspection during fabrication and installation of isolator units and energy dissipation devices that are part of the seismic isolation system	☐		☐	☒
SDC D, E or F 8. Cold-formed steel special bolted moment frames: Inspection during installation of frames part of the seismic isolation system	☐		☐	☒

Seismic Resistance Structural Testing				
1. Structural steel:				
SDC B, C, D, E, or F a. Seismic force-resisting systems: Non-destructive testing in accordance with quality assurance requirements of AISC 341	☐	05 12 00	☐	☐
b. Structural steel elements: nondestructive testing in accordance with the quality assurance requirements of AISC 341	☐	05 12 00	☐	☐
SDC B, C, D, E, or F 2. Nonstructural Components: Confirm certification of compliance of seismic qualification for supports and attachments has been submitted by manufacturer for specified systems	☐		☐	☐
SDC C, D, E or F 3. Designated seismic systems: Confirm certification of compliance of seismic qualification has been submitted for designated seismic systems	☐	??	☐	☐
SDC B, C, D, E, or F 4. Seismic isolation systems: Testing per ASCE 7, Section 17.8	☐		☐	☐

Structural Observations				
One or more of: RC IV; high-rise building; special structures as determined by RDP; required by building official	☐			
1. Structural observations for structures				
SDC D, E, or F where RC III or IV or SDC E where RC I or II and > 2 stories above grade plane	☐			
2. Structural observations for seismic resistance				
V = 130 mph or greater and RC III or IV	☐			
3. Structural observations for wind resistance				

SECTION 01 42 00 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

- A. "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.
- B. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."
- C. "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."
- D. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.
- E. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project Site.
- F. "Provide": Furnish and install, complete and ready for the intended use.

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. When the building code in effect for the Project cites a different edition, comply with the building code-cited edition.
- 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. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AA - Aluminum Association (The); www.aluminum.org.
2. AABC - Associated Air Balance Council; www.aabc.com.
3. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
4. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
5. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
6. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
7. ABBA - Air Barrier Association of America; www.airbarrier.org.
8. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
9. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org.
10. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
11. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
12. AF&PA - American Forest & Paper Association; www.afandpa.org.
13. AGA - American Gas Association; www.aga.org.
14. AHAM - Association of Home Appliance Manufacturers; www.aham.org.
15. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
16. AI - Asphalt Institute; www.asphaltinstitute.org.
17. AIA - American Institute of Architects (The); www.aia.org.
18. AISC - American Institute of Steel Construction; www.aisc.org.
19. AISI - American Iron and Steel Institute; www.steel.org.
20. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
21. ALSC - American Lumber Standard Committee, Incorporated; www.alsc.org.
22. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
23. ANSI - American National Standards Institute; www.ansi.org.
24. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
25. APA - APA - The Engineered Wood Association; www.apawood.org.
26. APA - Architectural Precast Association; www.archprecast.org.
27. API - American Petroleum Institute; www.api.org.
28. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
29. ARI - American Refrigeration Institute; (See AHRI).
30. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
31. ASCE - American Society of Civil Engineers; www.asce.org.
32. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
33. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
34. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
35. ASNT - American Society for Nondestructive Testing (The); www.asnt.org.
36. ASSE - American Society of Safety Engineers (The); www.asse.org.
37. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
38. ASTM - ASTM International; www.astm.org.
39. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
40. AWCI - Association of the Wall and Ceiling Industry; www.awci.org.

41. AWEA - American Wind Energy Association; www.awea.org.
42. AWI - Architectural Woodwork Institute; www.awinet.org.
43. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
44. AWWA - American Water Works Association; www.awwa.org.
45. AWS - American Welding Society; www.aws.org.
46. AWWA - American Water Works Association; www.awwa.org.
47. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
48. BIA - Brick Industry Association (The); www.gobrick.com.
49. BICSI - BICSI, Inc.; www.bicsi.org.
50. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.com.
51. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
52. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bwfbadminton.org.
53. CDA - Copper Development Association; www.copper.org.
54. CE – Conformite Europeenne; <http://ec.europa.eu/growth/single-market/ce-marking/>.
55. CEA - Canadian Electricity Association; www.electricity.ca.
56. CEA - Consumer Electronics Association; www.ce.org.
57. CFFA - Chemical Fabrics & Film Association, Inc.; www.chemicalfabricsandfilm.com.
58. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
59. CGA - Compressed Gas Association; www.cganet.com.
60. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
61. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
62. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
63. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
64. CPA - Composite Panel Association; www.pbmdf.com.
65. CPPA – (Formerly: Corrugated Polyethylene Pipe Association; a Division of the Plastic Pipe Institute); www.plasticpipe.org/drainage/.
66. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
67. CRRC - Cool Roof Rating Council; www.coolroofs.org.
68. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
69. CSA - Canadian Standards Association; www.csa.ca.
70. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
71. CSI - Construction Specifications Institute (The); www.csinet.org.
72. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
73. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
74. CWC - Composite Wood Council; (See CPA).
75. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
76. DHI - Door and Hardware Institute; www.dhi.org.
77. ECA - Electronic Components Association;(See ECIA).
78. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
79. ECIA – Electronic Components Industry Association; www.eciaonline.org.
80. EIA - Electronic Industries Alliance; (See TIA).
81. EIMA - EIFS Industry Members Association; www.eima.com.
82. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
83. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org.
84. ESTA - Entertainment Services and Technology Association; (See PLASA).
85. ETL - Intertek (See Intertek); www.intertek.com.
86. EVO - Efficiency Valuation Organization; www.evo-world.org.

87. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
88. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
89. FM Approvals - FM Approvals LLC; www.fmglobal.com.
90. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
91. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridarroof.com.
92. FSA - Fluid Sealing Association; www.fluidsealing.com.
93. FSC - Forest Stewardship Council U.S.; www.fscus.org.
94. FSEC - Florida Solar Energy Center; www.fsec.ucf.edu.
95. GA - Gypsum Association; www.gypsum.org.
96. GANA - Glass Association of North America; www.glasswebsite.com.
97. GS - Green Seal; www.greenseal.org.
98. HI - Hydraulic Institute; www.pumps.org.
99. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
100. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
101. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
102. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
103. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
104. IAS - International Accreditation Service; www.iasonline.org.
105. IAS - International Approval Services; (See CSA).
106. ICBO - International Conference of Building Officials; (See ICC).
107. ICC - International Code Council; www.iccsafe.org.
108. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
109. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
110. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
111. IEC - International Electrotechnical Commission; www.iec.ch.
112. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
113. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
114. IESNA - Illuminating Engineering Society of North America; (See IES).
115. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
116. IGCC - Insulating Glass Certification Council; www.igcc.org.
117. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
118. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
119. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
120. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
121. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
122. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
123. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
124. ISO - International Organization for Standardization; www.iso.org.
125. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
126. ITU - International Telecommunication Union; www.itu.int/home.
127. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
128. LMA - Laminating Materials Association; (See CPA).
129. LPI - Lightning Protection Institute; www.lightning.org.

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

175. RFCI - Resilient Floor Covering Institute; www.rfci.com.
176. RIS - Redwood Inspection Service; www.redwoodinspection.com.
177. SAE - SAE International; www.sae.org.
178. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
179. SDI - Steel Deck Institute; www.sdi.org.
180. SDI - Steel Door Institute; www.steeldoor.org.
181. SEFA - Scientific Equipment and Furniture Association; www.sefalabs.com.
182. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
183. SGCC - Safety Glazing Certification Council; www.sgcc.org.
184. SIA - Security Industry Association; www.siaonline.org.
185. SJI - Steel Joist Institute; www.steeljoist.org.
186. SMA - Screen Manufacturers Association; www.smainfo.org.
187. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
188. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
189. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
190. SPIB - Southern Pine Inspection Bureau; www.spib.org.
191. SPRI - Single Ply Roofing Industry; www.spri.org.
192. SRCC - Solar Rating and Certification Corporation; www.solar-rating.org.
193. SSINA - Specialty Steel Industry of North America; www.ssina.com.
194. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
195. STI - Steel Tank Institute; www.steeltank.com.
196. SWI - Steel Window Institute; www.steelwindows.com.
197. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
198. TABB - Testing, Adjusting and Balancing Bureau; www.tabbcertified.org.
199. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
200. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
201. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
202. TIA - Telecommunications Industry Association; (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
203. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
204. TMS - The Masonry Society; www.masonrysociety.org.
205. TPI - Truss Plate Institute; www.tpinst.org.
206. TPI - Turfgrass Producers International; www.turfgrasssod.org.
207. TRI - Tile Roofing Institute; www.tilerroofing.org.
208. UFAC - Upholstered Furniture Action Council; www.ufac.org.
209. UL - Underwriters Laboratories Inc.; www.ul.com.
210. ULC - Underwriters Laboratories of Canada; www.ulc.ca.
211. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
212. USAV - USA Volleyball; www.usavolleyball.org.
213. USBA - United States Badminton Association; www.usabadminton.org.
214. USGBC - U.S. Green Building Council; www.usgbc.org.
215. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
216. WA - Wallcoverings Association; www.wallcoverings.org.
217. WASTEC - Waste Equipment Technology Association; www.wastec.org.
218. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
219. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
220. WDMA - Window & Door Manufacturers Association; www.wdma.com.

221. WI - Woodwork Institute; (Formerly: WIC - Woodwork Institute of California); www.wicnet.org.
222. WMMPA - Wood Moulding & Millwork Producers Association; (See MMPA).
223. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
224. WWPA - Western Wood Products Association; www.wwpa.org.

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. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
2. ICC - International Code Council; www.iccsafe.org.
3. 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 believed to be accurate 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; <http://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. FCC - Federal Communications Commission; www.fcc.gov.
9. FG - Federal Government Publications; www.gpo.gov.
10. GSA - General Services Administration; www.gsa.gov.
11. HUD - Department of Housing and Urban Development; www.hud.gov.
12. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; <http://eetd.lbl.gov>.
13. NIST - National Institute of Standards and Technology; www.nist.gov.
14. OSHA - Occupational Safety & Health Administration; www.osha.gov.
15. SD - Department of State; www.state.gov.
16. TRB - Transportation Research Board; National Cooperative Highway Research Program; www.trb.org.
17. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
18. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
19. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
20. USP - U.S. Pharmacopeia; www.usp.org.
21. 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. ADAAG - Accessibility Guidelines for Buildings and Facilities, Available from United States Access Board; www.access-board.gov.
2. AHERA - Asbestos Hazard Emergency Response Act, Available from US Environmental Protection Agency; www.epa.gov.
3. BCNYS - Building Code of New York State, Available from New York State Department of State; www.dos.ny.gov/DCEA/.
4. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
5. DOD - Department of Defense; Military Specifications and Standards; Available from Department of Defense Single Stock Point; <http://quicksearch.dla.mil>.
6. DSCC - Defense Supply Center Columbus; (See FS).
7. FED-STD - Federal Standard; (See FS).
8. 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/ccb.
9. IBC - International Building Code, Available from International Code Council; www.iccsafe.org.
10. LEED - Leadership in Energy and Environmental Design (Green Building Rating Systems), Available from U.S. Green Building Council; www.usgbc.org.
11. MILSPEC - Military Specification and Standards; (See DOD).
12. NEC - National Electrical Code, Available from NFPA (National Fire Protection Association); www.nfpa.org.
13. NSPC - National Standard Plumbing Code, Available from Plumbing-Heating-Cooling Contractors Association; www.phccweb.org.
14. NYSED/MPS - New York State Education Department Manual of Planning Standards, Available from New York State Education Department (Facilities Planning); www.p12.nysed.gov/facplan/forms.html.
15. USAB - United States Access Board; www.access-board.gov.
16. UFAS - Uniform Federal Accessibility Standards Available from Access Board; www.access-board.gov.
17. 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 Appliance and Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. NYSDEC - New York State Department of Environmental Conservation; www.dec.ny.gov.
3. NYSDOH - New York State Department of Health; www.health.ny.gov.
4. NYSDOT - New York State Department of Transportation; www.dot.ny.gov.
5. NYSED - New York State Education Department (Facilities Planning); www.p12.nysed.gov/facplan/.
6. NYSERDA - New York State Energy Research and Development Authority; www.nyserda.ny.gov.
7. OSHPD - Office of Statewide Health Planning and Development (State of California); www.oshpd.ca.gov.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00

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 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. Division 01 Section "Multiple Contract Project Summary - Project Schedule" for responsibilities for temporary facilities and controls for projects utilizing multiple contracts.
- C. Temporary utilities include, but are not limited to, the following:
 - 1. Water service and distribution
 - 2. Electric power and lighting
 - 3. Heat
 - 4. Ventilation
 - 5. Sanitary facilities
 - 6. Storm and sanitary sewer
 - 7. Internet service
- D. Support facilities include, but are not limited to, the following:
 - 1. Field offices and storage
 - 2. Construction Manager's field office
 - 3. Dewatering
 - 4. Temporary enclosures
 - 5. Hoists and temporary elevator use
 - 6. Project signs and required notifications
 - 7. Wayfinding signs
 - 8. Waste collection and disposal
 - 9. Pest control
- E. Security and protection facilities include, but are not limited to, the following:
 - 1. Fire protection
 - 2. Barricades, warning signs and lights
 - 3. Environmental protection
 - 4. Tree and plant protection

5. Temporary fencing
6. Temporary enclosures
7. Temporary partitions

1.3 USE CHARGES

- A. General: Installation and removal of 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 Service: Use water from the Owner's existing water system if available. If not available, contractor must supply water required for the performance of their work.
- C. Electric Power: Temporary electric power, including set up and maintenance is the responsibility of the Electrical Contractor.
 1. Use of electric power from the Owner's permanent power system (when operational) is available to all contractors without cost.
 2. Electrical Contractor is to provide power to the Construction Manager's job trailer.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all informational submittals required by this Section concurrently.

1.5 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. Shoring and Bracing Plan: Submit shoring and bracing plan, designed, signed and sealed by the qualified professional engineer responsible for its preparation.
- C. Project Identification Signs: Show fabrication and installation details, including layouts, typestyles, graphic elements, and message content.

1.6 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.
- C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Plastic Barrier Fencing: High-density polyethylene mesh, high-visibility orange; minimum 4 feet high with minimum 6-foot-long wood stakes spaced a maximum of 8 feet on center, and with a continuous wood top stake; steel wire or nylon cable ties every 12 inches on center; with warning signs as indicated or required.
- B. Dust-Control Adhesive-Surface Walk-Off Mats: Provide mats minimum 36 by 60 inches.
- C. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Field Office for Project Representative: Of sufficient size (not less than 12 feet by 60 feet box size) to accommodate needs of Owner's Project Representative, Architect, and to accommodate Project meetings specified in other Division 01 Sections. Provide secure office, with operable, insect-screened windows; two lockable entrance doors and two sets of OSHA-approved aluminum steps, with handrails. Provide insulated aluminum perimeter skirting. Provide consumable supplies and maintenance, including weekly cleaning service, until Project closeout.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Williams Scotsman, an Algeco Scotsman Company; 64' x 12' Mobile Office, or comparable product.
 - 2. Furnish and equip office as follows:
 - a. Furniture required for Project-site documents including two lockable 4-drawer file cabinets, one 96-inch-long plan table, plan racks for twenty-four [30][36]-inch plan sets, and one bookcase.
 - b. Furniture required for office space including one desk, one executive chair, one lockable 2-drawer file cabinet, and one bookcase.
 - c. Conference room of sufficient size to accommodate meetings of 20 individuals. Furnish room with three folding conference tables (each 30 inches by 96 inches), 20 chairs, and 4-foot-square tack and marker boards.
 - d. Office equipment and supplies as follows:
 - 1) Electronic Communication Service: Provide a desktop computer in the field office to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:

- a) Processor: Intel Core i5 or i7.
 - b) Memory: 16 gigabyte.
 - c) Disk Storage: 1-terabyte hard-disk drive and combination DVD-RW/CD-RW drive.
 - d) Display: 24-inch LCD monitor with 256-Mb dedicated video RAM.
 - e) Full-size keyboard and mouse.
 - f) Network Connectivity: 10/100BaseT Ethernet.
 - g) Operating System: Microsoft Windows 10 Professional.
 - h) Productivity Software: Current editions of Microsoft Office Professional, including Word, Excel, and Outlook; Microsoft Project; Adobe Reader DC; and WinZip 10.0 or higher.
 - i) Printer: "All-in-one" unit equipped with printer server, combining color printing, photocopying, and scanning, or separate units for each of these three functions; capable of printing 24 copies per minute, 11 by 17 inch sized copies, and with the ability to collate and staple. Provide toner, cartridges, and staples.
 - j) 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.
 - k) Internet Security: Integrated software, providing software firewall, virus, spyware, phishing, and spam protection in a combined application.
 - l) Backup: External hard drive, minimum 2 terabytes, with automated backup software providing daily backups.
 - m) Paper Supplies, Per Month: Two reams of 20-pound white 8-1/2 by 11 inch paper suitable for use in printer.
- 2) Portable Computer: Provide a portable 2-in-1 computer for field use to access Project electronic documents and maintain electronic communications. Equip computer with not less than the following:
- a) Processor: Intel Core i5 or i7.
 - b) Memory: 8 gigabyte.
 - c) Storage: 256 gigabyte solid-state drive.
 - d) Screen Size: Minimum 12-inch with touchscreen.
 - e) Detachable keyboard.

- f) LTE capability.
 - g) Operating System: Microsoft Windows 10 Professional.
 - h) Productivity Software: Current editions of Microsoft Office Professional, including Word, Excel, and Outlook; Microsoft Project; Adobe Reader DC; and WinZip 10.0 or higher.
- e. Fire extinguisher.
- f. First aid kit.
- g. Three trash cans.
- h. Bottled drinking water with hot and cold water dispenser, and private toilet.
- i. Heating and cooling equipment necessary to maintain a uniform indoor temperature of 68 to 72 deg F.
- j. Electrical power service and 120-V ac duplex receptacles, with no fewer than one receptacle on each wall.
- k. Lighting fixtures capable of maintaining average illumination of 20 fc at desk height.
- l. Security system, similar to Tattletale Portable Alarms.
- m. Telephone Service:
 - 1) Two land-based telephone lines, each with a cordless telephone and digital answering machine. Arrange for monthly service and calls to be billed directly to Owner.
- C. Storage 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: Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control. Use of permanent HVAC system is not permitted.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. HVAC 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.
 - a. Directly vent all combustion gases to the exterior.
 - b. Design system to use 100 percent outside make-up air.
 - c. 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) Temp-Air, Inc.
- C. Air-Filtration Units: Primary and secondary HEPA-filter-equipped portable units with four-stage filtration. Provide single switch for emergency shutoff. Configure to run continuously.
- D. Temporary Toilet Units: Provide self-contained

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.
- 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 private system indicated as directed by authorities having jurisdiction.

- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.
1. Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner. At Substantial Completion, restore these facilities to condition existing before initial use.
 2. Provide reduced pressure zone (RPZ) backflow preventer at connection to existing system. Provide appropriate drainage piping with air gap from the backflow preventer relief port to an approved discharge point.
 - a. Basis-of-Design Product: Watts Water Technologies; Series LF909.
 3. Provide 3/4-inch hose connections (at each level for multi-storied buildings) spaced so that a 200-foot-long hose will reach all areas of building where a Contractor requires water.
 4. Provide sign at each outlet indicating temporary water sources are not for human consumption.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and bottled 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. Use of Owner's toilet facilities and drinking water facilities is not permitted.
1. Provide continual supply of toilet paper, paper towels, soap, and bottled drinking water.
- 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. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
1. Prior to commencing work, isolate the HVAC system in area where work is to be performed.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air-filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.

2. Maintain dust partitions during the Work. Use vacuum collection attachments on dust-producing equipment. Isolate limited work within occupied areas using portable dust-containment devices.
 3. Perform daily construction cleanup and final cleanup using approved, HEPA-filter-equipped vacuum equipment.
- G. 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. Maintain equipment in a condition acceptable to Owner.
 3. Service Requirements:
 - a. Provide 120/208 V, 60 Hz, single/three phase alternating current with capacity to accommodate maximum electric power and lighting requirements during construction.
 - b. Provide minimum of two each 120/208 V duplex outlets spaced so that a 50-foot-long extension cord will reach all areas of building where a Contractor requires electric power.
 4. Distribution System: Provide poles, pole hardware, overhead, exterior and interior wiring, transformers, and similar items required for electric power service and lighting.
 - a. Single-Phase Wiring: 3-wire, 120/208 V feeders, with No. 12 three- or four-wire branch circuits conforming to NEC No. 210-7 and OSHA requirements, with branch circuit protective device.
 - 1) Provide each branch circuit with 120/208 V, single-phase fused grounding-type power outlets, buss type SRX or SKY, with approved covered box and fuses as required.
 - 2) Provide panelboards containing ground fault interrupter type circuit breakers meeting applicable NEC requirements with required number of poles.
 - a) Basis-of-Design Product: Square D by Schneider Electric; QO120GFI for each branch circuit allowing maximum total load of 16 amps on each 20 amp branch circuit.
 - 3) Provide appropriately-sized green grounding wiring complying with NEC requirements in feeder and branch circuits to provide grounding of all 120 and 208 V outlets in approved manner.
 - b. Three-Phase Wiring: Three-wire, 208 V feeders, with fused disconnect switches, allowing minimum 5 hp motor load at 208 V from each feeder, and providing four three-phase outlets on each floor near points of use.

5. Extension Cords: Temporary 3-wire plug-in extensions with grounding features at both ends.
- H. 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.
- I. Telephone Service: Provide temporary telephone service in Contractor's field office.
1. Provide Contractor's superintendent with cellular telephone or portable two-way radio for use when away from field office.
- 3.4 SUPPORT FACILITIES INSTALLATION
- A. General: Comply with the following:
1. Provide construction for temporary offices, shops, and sheds located within construction area or within 30 feet of building lines that is noncombustible according to ASTM E 136. Comply with NFPA 241.
 2. Maintain support facilities until Substantial Completion.
- 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 according to Division 31 Section "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 according to Division 32 Section "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: Provide temporary parking areas for construction personnel.
- F. 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 in all areas of construction operations.
- G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Division 01 Section "Execution."
1. Waste from Construction Operations: Includes materials not intended or necessary for completion of Work, including packing materials, food waste, waste paper, and similar items. Excavated material is not included in this definition.
 2. Chutes: Provide enclosed chutes for removal of waste from construction operations from levels above grade level or roof. Remove waste in a controlled manner; materials shall not be dropped or thrown from heights.
- H. Recycling Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
1. Provide appropriately marked containers or bins for controlling recyclable waste until they are 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. Packaging:
 - a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - b. Polystyrene Packaging: Separate and bag materials.
 - c. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site.
 3. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

- I. Shoring and Bracing: Provide and maintain shoring, bracing, and structural supports, designed by a qualified professional engineer, required to preserve stability and prevent movement, settlement, or collapse of new and existing construction and to prevent unexpected or uncontrolled movement or collapse of construction.
- J. Staging and Scaffolding: Provide facilities necessary for supporting materials and personnel in accordance with requirements of authorities having jurisdiction
- K. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
- L. Temporary Elevator Use: Use of elevators is not permitted..
- M. Existing Elevator Use: Use of Owner's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore elevators to condition existing before initial use.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, restore damaged work so no evidence remains of correction work.
- N. Temporary Stairs: Until permanent stairs are available, provide temporary stairs where ladders are not adequate.
- O. Existing Stair Usage: Use of Owner's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to Owner. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.
- P. 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.

C. Temporary Erosion and Sedimentation Control:

1. 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 “New York State Standards and Specifications for Erosion and Sediment Control” published by Empire State Chapter Soil and Water Conservation Society, under the direction of the New York State Department of Environmental Conservation, Division of Water.
 - a. Soil Erosion and Sediment Control (SESC) Plan: Comply with SESC Plan for this Project in consultation with appropriate local agencies and soil conservation service.
 - 1) At the Preconstruction Conference, Architect will provide the Contractor, for its signing, certificates of compliance, which the Architect will submit with the SESC plan to the New York State Department of Environmental Conservation (NYSDEC) to satisfy the State Pollutant Discharge Elimination System (SPDES) permit. The Contractor is responsible for complying with the SPDES permit and Stormwater Pollution Prevention Plan (SWPPP) throughout construction.
 - 2) At the Preconstruction Conference, submit schedule for completion of installation of measures identified in SESC Plan.
 - a) Do not begin construction at the site until measures identified in the SESC Plan have been accepted by the Architect and installed at site.
 - 3) If conditions change during construction, submit proposed revisions to the SESC Plan to the Architect and other agencies identified in the SPDES permit and SWPPP.
2. General Soil Erosion and Sediment Control Measures:
 - a. Refer to SESC Plan for specific measures in addition to those identified below.
 - b. Take precautions to prevent mud from construction site accumulating on adjoining public roads and sidewalks and Owner's roads and sidewalks. Clean accumulations of mud from public roads and sidewalks and from Owner's roads and sidewalks when required by public authorities and when directed by Architect.
 - c. Plan and execute construction by methods to control surface drainage from cuts and fills and from borrow areas, and to prevent erosion and sedimentation.
 - 1) Minimize amount of bare soil exposed at one time.
 - 2) Provide temporary measures and erosion control devices or methods appropriate to conditions at site.
 - 3) Construct fills and waste areas by selective placement to avoid erosive surface silts or clays.

- 4) Inspect earthwork to detect evidence of erosion and sedimentation as outlined in the SPDES permit and SWPPP. Immediately apply corrective measures at no cost to the Owner. Contractor will be responsible for any fines issued by any agency as a result of non-compliance with the SPDES permit and SWPPP.
- 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.
 1. Maintain protection zones free of weeds and trash.
 2. Do not prune roots or branches of trees to remain without approval of Architect.
 - a. If pruning is approved, engage an experienced, qualified arborist to perform pruning and treating.
 3. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations, in a manner approved by Architect.
 - F. Site Enclosure Fence: Before construction operations begin, 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 and one set to the Construction Manager.
 - G. 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.
 - H. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
 - I. All prime contractors shall provide OSHA approved fall protection for their workers as required
 - J. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
 1. Where temporary egress doors occur, provide minimum clear opening width of 36 inches.
 - K. Covered Walkway: Erect protective, covered walkway for passage of individuals through or adjacent to Project site. Coordinate with entrance gates, other facilities, and obstructions. Comply with regulations of authorities having jurisdiction and requirements indicated on Drawings.

1. Provide overhead decking, protective enclosure walls, handrails, barricades, warning signs, exit signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage.
 2. Paint and maintain appearance of walkway for duration of the Work.
- L. 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. Face exterior enclosures with plywood, unless otherwise approved, in advance, by Architect. Polyethylene sheet may not be used for exterior enclosures.
1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- M. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by Owner from fumes and noise.
1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fire-retardant-treated plywood on construction operations side.
 2. Where fire-resistance-rated temporary partitions are indicated or are required by authorities having jurisdiction, construct partitions according to the rated assemblies.
 3. Insulate partitions to control noise transmission to occupied areas.
 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 5. Paint surfaces exposed to view in areas occupied by Owner.
 6. Protect air-handling equipment.
 7. Provide walk-off mats at each entrance through temporary partition.
- N. 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.
 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to 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.

3.6 MOISTURE AND MOLD CONTROL

- A. 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.
- B. 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.
- C. 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. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

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, HVAC, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 - a. Heating: Provide heating between September 15 and May 31.
 - 1) Maintain minimum interior temperature of 60 deg F.
 - 2) Maintain relative humidity levels between 50 and 55 percent.
 2. Where temperature and humidity levels required for the proper installation and application of a product or system differ from those listed above, provide supplemental temporary services to maintain the required temperature and humidity levels.
 3. Use temporary duct systems, industrial fans, or other equipment to circulate tempered air to all areas of work.
 4. Maintain operation of temporary lighting in corridors, stairwells and similar locations on a 24-hour basis.
- 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.
 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 Division 01 Section "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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.

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. Comparable Product: Product that is demonstrated and approved through submittal process 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 specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products.

1.4 ACTION SUBMITTALS

- A. Comparable Product Request Submittal: Submit request for consideration of each comparable product. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
 - 1. Include data to indicate compliance with the requirements specified in "Comparable Products" Article.

2. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor through Construction Manager of approval or rejection of proposed comparable product request.

- a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."

- B. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.

1.5 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.

1. Each contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.
 2. If a dispute arises between contractors over concurrently selectable but incompatible products, Architect will determine which products shall be used.

- B. The use of asbestos containing building materials is prohibited.

1. Contractor is responsible for providing closeout documentation certifying no asbestos containing building materials have been used in the Work.

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 to determine that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for review and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. 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 warranty furnished by individual manufacturer for a particular product and specifically 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. Warranty periods related to Boilers and Accessory Equipment, and Air Conditioning Equipment do not begin until one year after the date of substantial completion.
 3. See individual Specification Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "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 not in conflict with 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 "or approved equal," or "or approved," comply with requirements in "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Products:
 - a. 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. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product.
2. Manufacturers:
 - a. 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. Comply with requirements in "Comparable Products" Article for consideration of an unnamed manufacturer's product.
3. 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, or a product by an unnamed manufacturer that complies with requirements. Drawings and Specifications 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.

C. Visual Matching Specification: Where Specifications require "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 Division 01 Section "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: 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 both standard and premium items.

2.2 COMPARABLE PRODUCTS

- A. Conditions for Consideration of Comparable Products: 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 the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 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.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 73 00 - EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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. Examination of conditions.
 - 2. Preparation for construction.
 - 3. Construction layout.
 - 4. Field engineering and surveying.
 - 5. Installation of the Work.
 - 6. Cutting and patching.
 - 7. Progress cleaning.
 - 8. Starting and adjusting.
 - 9. Protection of installed construction.
 - 10. Correction of the Work.

1.3 DEFINITIONS

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

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For land surveyor and professional engineer.
- B. Structural Layout Plan: Survey of Structural Grid in relation to existing building(s).

1.5 CLOSEOUT SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Certified Surveys: Submit two (2) copies signed by land surveyor.

1.6 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: 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.
- 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, 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.
 - 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.
 - 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 products and equipment.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: 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.

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, mechanical and electrical systems, and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, 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. 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 information to Architect according to requirements in Division 01 Section "Project Management and Coordination."

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. If discrepancies are discovered, notify Architect and Construction Manager promptly.
- B. General: Engage a land surveyor to lay out the Work using 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 dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 - 3. Inform installers of lines and levels to which they must comply.
 - 4. Check the location, level and plumb, of every major element as the Work progresses.
 - 5. Notify Architect and Construction Manager when deviations from required lines and levels exceed allowable tolerances.
- 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.
 - 1. Structural Layout Plan: Perform Survey of Structural Grid as provided in Contract Documents, including any specific Layout Notes and/or Plan. Provide Structural Layout Plan for review by Engineer prior to performing any additional work.
- 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 and Construction Manager.

3.4 FIELD ENGINEERING

- A. 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 or Construction Manager. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Architect and Construction Manager before proceeding.
 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points.
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.
- C. Certified Survey: On completion of major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5 INSTALLATION

- A. General: 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.
- 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 the best possible results. 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.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

- G. 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.
 - 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.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 CUTTING AND PATCHING

- A. Cutting and Patching, 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. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.
- G. 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.

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.
- H. 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. Provide materials and comply with installation requirements specified in other Sections, where applicable.
1. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.
 2. 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. Provide additional coats until patch blends with adjacent surfaces.
 3. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
 4. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition and ensures thermal and moisture integrity of building enclosure.
- I. 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. General: 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.
 - 4. Coordinate progress cleaning for joint-use areas where Contractor and other contractors are working concurrently.
- 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 in Finished Areas: 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 Division 01 Section "Temporary Facilities and Controls."
- 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 assure 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. Coordinate startup and adjusting of equipment and operating components with requirements in Division 01 Section “General Commissioning Requirements.”
- B. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- C. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.
- D. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.9 PROTECTION 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. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Architect may issue “Construction Deficiency Report” for items identified by Architect as needing correction. Promptly repair or remove and replace defective construction identified in Construction Deficiency Report. Provide written notification to Architect when identified item has been corrected.
- C. Restore permanent facilities used during construction to their specified condition.
- D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 00

SECTION 01 77 00 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General 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. Repair of the Work.
- B. All Submittals identified in Section 01 77 00 are classified as “Informational Submittals” in accordance with Specification Section 01 33 00.

1.3 SUBSTANTIAL COMPLETION PROCEDURES

- A. Submittals Prior to Substantial Completion: Complete the following before Contract-scheduled date of Substantial Completion:
 - 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 occupancy permits, operating certificates, electrical inspection reports, preliminary balance reports, and similar releases.
 - 2. Submit notarized letter on Contractor’s letterhead certifying no asbestos containing building materials have been used in the Work. Also include a copy in the Operation and Maintenance Manuals.
 - 3. Submit testing, adjusting, and balancing records. Also include a copy in the Operation and Maintenance Manuals.
 - 4. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
- B. Procedures Prior to Substantial Completion: Complete the following before Contract-scheduled date of Substantial Completion:
 - 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. Maintenance to be performed by a factory authorized service representative so as not to void the equipment warranty.
 5. Advise Owner of changeover in heat and other utilities.
 6. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 7. Complete all items on any Field Observation and Construction Deficiency Reports and submit a copy of the reports to the Architect and Construction Manager identifying how each item was addressed in detail, including the date of completion.
 8. Complete final cleaning requirements as specified below, including touchup painting.
 9. Repair and restore marred exposed finishes to eliminate visual defects.
 10. Complete all items noted as requiring completion/correction from the Commissioning consultant and TAB (Testing and Balancing) consultant.
- C. Inspection: No later than 14 days prior to the Contract-scheduled date of Substantial Completion, submit a letter to the Architect and Construction Manager confirming the work is on schedule for Substantial Completion by the contract specified date. No later than seven days after Contract-scheduled date of Substantial Completion (including authorized adjustments), the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. Absent the Contractor letter confirming readiness of work, the Architect may elect to postpone the Substantial Completion inspection.
1. Additional Inspections: Request additional Substantial Completion inspections when the work that was not complete for the scheduled Substantial Completion inspection is now ready to inspect.
 - a. Costs for such additional Substantial Completion inspections will be deducted from sums otherwise due the Contractor by deduct Change Order.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.4 FUNCTIONAL COMPLETION PROCEDURES

- A. Functional Completion applies to Contract Work being Commissioned. The commissioning of Divisions 01, 22, 23, and 26 (as applicable to each Contractor) must be complete prior to Functional Completion, except for the following:
1. Deferred Work approved in writing by the Architect.
 2. Control system training planned to be performed after occupancy and final acceptance

3. Any required seasonal TAB work to be formed during Warranty period.
 4. Other approved deferred testing.
- B. Completion of Commissioning required to demonstrate Functional Completion includes the following as applicable for all systems, but is not limited to:
1. Completed and signed pre-functional checklists and start-up documentation.
 2. Requested trend logs complete, data and forms submitted and approved.
 3. Completion of all functional testing.
 4. Required training of Owner personnel completed and approved.
 5. Submission of final approved TAB report.
 6. Submission of final approved commissioning report.
 7. Submission of the approved O&M manuals.
 8. All identified deficiencies have been corrected or are approved in writing by the Owner to be excepted from this milestone.
- C. The Architect will determine the date of Functional Completion after reviewing the Commissioning Agent's recommendation for Functional Completion.

1.5 FINAL COMPLETION PROCEDURES

- A. Submittals Prior to Final Completion: Before final inspection for determining final completion, complete the following:
1. Submit copy of Architect's Substantial Completion inspection list of items to be completed or corrected. The copy of the list shall state that each item has been completed or otherwise resolved for acceptance, what corrective action was taken, and the date of completion. Items that are in dispute shall have an explanation attached.
 2. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Division 01 Section "Demonstration and Training."
 3. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, property surveys, and similar final record information.
 4. Submit closeout submittals specified in individual Specification Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 5. Submit maintenance material submittals specified in individual Specification Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Owner. Contractor to provide a transmittal detailing all delivered maintenance materials and obtain Owner signature confirming delivery of such; a copy of transmittal with Owner's signature shall be provided with Closeout submittals. Label with manufacturer's name and model number where applicable. All keys shall be tagged and labeled.

6. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 7. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."
- B. Inspection: No later than seven days after the Contract-scheduled date for final completion, Architect and Construction Manager will proceed with the final completion inspection. The Architect will review the final Certificate for Payment after the inspection or will notify the Contractor of the outstanding items that must be completed or corrected before the certificate will be processed.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete has been completed or corrected. The Owner and Architect and Construction Manager reserve the right to add items to the Substantial Completion and final completion inspection lists as long as it is part of the Contractor's work. Complete all Contract requirements prior to the final completion inspection to avoid any further re-inspection cost.
 - a. Costs for such re-inspections and any costs for extension of the Architect's and Construction Manager's services will be deducted from sums otherwise due the Contractor.

1.6 SUBMITTAL OF PROJECT WARRANTIES

- A. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual. Warranties for all equipment, materials, and systems on the Project are to start no sooner than the date of substantial completion. Provide extended warranties for all equipment, materials, and systems that may have been turned over to the Owner for its use regardless of the phased completion of the Project.
- B. 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 two digital media copies, PDF on thumb drive.
- C. Warranties in Paper Form:
1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

4. Submit two paper copies, as listed above.
- D. 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.

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 inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, 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 neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Remove surface dust and dirt from all vertical and horizontal painted surfaces. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

- g. Sweep concrete floors broom clean in unoccupied spaces using sweeping compound that is compatible with new finishes.
 - h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
 - i. 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.
 - j. Remove labels that are not permanent.
 - k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - l. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - m. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - n. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.
 - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
 - p. Leave Project clean and ready for occupancy.
- C. Construction Waste Disposal: Comply with waste disposal requirements in Division 01 Section "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

- A. Complete repair and restoration operations before inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. 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 condition acceptable to Owner and Construction Manager.
 - 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 that already show evidence of repair or restoration.
 - 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 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 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.

1.3 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Manual Format: Submit operation and maintenance manuals in the following format:
 - 1. Two (2) paper copies as listed below.
 - 2. Two (2) digital media copies, PDF format on thumb drive.
- B. Prior to submission of paper copies and thumb drives as listed above, submit electronic files in PDF format for review and approval.

1.4 FORMAT OF OPERATION AND MAINTENANCE MANUALS

- A. 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.
 - 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, and subject matter of contents. 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. 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.
 4. 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.
- B. 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.

1.5 REQUIREMENTS FOR OPERATION AND MAINTENANCE MANUALS

- A. Organization: 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: Include the following information:
 - a. Subject matter included in manual.
 - b. Name and address of Project.
 - c. Date of submittal.
 - d. Name and contact information for Contractor.
 2. 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.
 - a. 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.
 3. 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.

1.6 OPERATION AND MAINTENANCE MANUALS

- A. Operation 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.
 - a. Product name and model number. Use designations for products indicated on Contract Documents.
 - b. Manufacturer's name.
 - c. Equipment identification with serial number of each component.
 - d. Equipment function.
 - e. Complete nomenclature and number of replacement parts.
 2. Operating Procedures: Include the following, as applicable:
 - a. Startup procedures.
 - b. Routine and normal operating instructions.
 - c. Regulation and control procedures.
 - d. Normal shutdown instructions.
 - e. Seasonal and weekend operating instructions.
 - f. Special operating instructions and procedures.
 3. Emergency Procedures: Include the following, as applicable:
 - a. Instructions on stopping.
 - b. Shutdown instructions for each type of emergency.
 - c. Operating instructions for conditions outside normal operating limits.
 - d. Special operating instructions and procedures.
 4. Wiring diagrams.
 5. Control diagrams.
 6. Piped system diagrams.
 - a. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.
 7. Precautions against improper use.
 8. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
- B. Maintenance Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, manufacturers' maintenance documentation, maintenance and service schedules, spare parts list and source information, maintenance service contracts, repair materials and sources, and warranties and bonds, as described below.

1. 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.
2. Product Information: Include the following, as applicable:
 - a. Product name and model number.
 - b. Manufacturer's name.
 - c. Color, pattern, and texture.
 - d. Material and chemical composition.
 - e. Reordering information for specially manufactured products.
3. Maintenance Procedures: Include manufacturer's written recommendations and 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. Schedule for routine cleaning and maintenance.
 - e. Repair instructions.
4. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:
 - a. Standard maintenance instructions and bulletins.
 - b. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 - c. Identification and nomenclature of parts and components.
 - d. List of items recommended to be stocked as spare parts.
5. 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.
 - a. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
 - b. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.
6. 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.
7. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
8. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

9. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.
 - a. Include procedures to follow and required notifications for warranty claims.

1.7 MANUAL PREPARATION

- A. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- B. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, 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.
 1. 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.
- C. 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 operation and maintenance manuals.
- D. Submittals: Include copy of each product submittal approved by Architect.
 1. If the "As-Specified Verification Form" was used as the product submittal, include all pertinent product data as described in this Section.
- E. Safety Data Sheets (SDS): Include copy of SDS for each product installed.
- F. Comply with Division 01 Section "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

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 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. Miscellaneous record submittals.

1.3 CLOSEOUT SUBMITTALS

- A. Record Drawings: Contractor to submit a full set of marked-up record drawings pertaining to their contract. Provide each drawing, whether or not changes and additional information were recorded. Comply with the following:
 - 1. Submit one full size set of the original, marked-up record prints.
 - 2. Submit two digital media copies, in color, in PDF format on thumb drives. PDFs to be saved and submitted as one file.
 - 3. Prior to submission of paper copies and thumb drives as listed above, submit electronic files in PDF format for review and approval.
- B. Miscellaneous Record Submittals: See other Specification Sections for miscellaneous record-keeping requirements and submittals in connection with various construction activities.
 - 1. Submit two paper copies of each submittal.

1.4 RECORD DRAWINGS

- A. Record Prints: Architect will provide Contractor with one paper set of Contract Drawings at beginning of Work at no cost.
 - 1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally.
 - 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.

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. Revisions to routing of piping and conduits.
- d. Revisions to electrical circuitry.
- e. Locations of concealed internal utilities.
- f. Changes made by Addendum.
- g. Changes made by Architect's Supplemental Instruction (ASI) forms.
- h. Changes made by Change Order or Construction Change Directive.
- i. Changes made following Architect's written orders.

3. Mark record sets with red, permanent marker.

B. Record Digital Data Files: Prepare a full set of digital data files of the Contract Drawings from the marked-up record prints.

C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Indicate name of Contractor.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.

1.5 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.

1.6 RECORDING AND MAINTENANCE

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, Construction Manager's and Owner'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 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. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Instruction in operation and maintenance of systems, subsystems, and equipment.
 - 3. Demonstration and training video recordings.

1.3 CLOSEOUT SUBMITTALS

- A. Attendance Record: For each demonstration and training session, submit list of participants, subjects covered, and length of instruction time.
- B. Demonstration and Training Video Recordings: Submit two copies of each demonstration and training session.
 - 1. Identification: On each copy, provide an applied label with the following information:
 - a. Name of Project.
 - b. Name of Architect.
 - c. Name of Construction Manager.
 - d. Name of Contractor.
 - e. Name of service representative providing training.
 - f. Name of instructor.
 - g. Date of video recording.

1.4 QUALITY ASSURANCE

- A. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 01 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 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.

1.6 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training for each system and for equipment not part of a system, as required by individual Specification Sections. 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. Operating standards.
 2. Documentation: Review the following items in detail:
 - a. Manuals.
 - b. Warranties and bonds.
 3. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Routine and normal operating instructions.
 - c. Regulation and control procedures.
 - d. Safety procedures.
 - e. Normal shutdown instructions.
 - f. Operating procedures for emergencies.
 - g. Seasonal and weekend operating instructions.
 - h. Special operating instructions and procedures.
 4. Adjustments: Include the following:
 - a. Noise and vibration adjustments.
 - b. Economy and efficiency adjustments.
 5. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
 6. Maintenance: Include the following:
 - a. Types of cleaning agents to be used and methods of cleaning.
 - b. Procedures for routine cleaning
 - c. Procedures for preventive maintenance.
 - d. Procedures for routine maintenance.
 7. Repairs: Include the following:
 - a. Diagnosis instructions.
 - b. Repair instructions.

1.7 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. 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, through Construction Manager with at least seven days' advance notice.

1.8 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

- A. 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.
 - 1. Submit video recordings on flash drive.
- B. 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 020810

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The asbestos abatement contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. The asbestos abatement contractor is responsible for the confirmation of the actual total quantities of the Work. The asbestos abatement contractor shall provide all labor, equipment and materials necessary to complete the Work in accordance with the Contract Documents. All asbestos material is to be disposed of as ACM waste. Quantities indicted below are confirmed asbestos. Please note that several work areas and all quantities will depend on the actual scope of work and how much ceiling area is disturbed that will affected piping.
- B. This work plan has been developed to comply with the regulations under Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56), Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(b)(4), Hazardous Waste Operations and as per contract documents and specifications.

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1. Drawing H-002.00: First Floor Area

- a. Remove and dispose of asbestos-containing Floor tile mastic within Work Area 1. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Library Testing Room, Special Ed Room, Special Ed Closet	12"x12" Floor Tile & Associated Mastic (under carpet in some areas)	+/- 6,200 square feet	NYSDOL 12 NYCRR Part 56-11.7- Non-Friable Flooring and mastics

2. Drawing H-003.00: Roof Area

- a.** Remove and dispose of asbestos-containing Pipe/fittings, floor tile chalkboard within Work Area 2. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
2	Main Roof, Throughout associated with the 24 HVAC units	HVAC Caulking Grey (Caulking at base of HVAC)	+/- 1200 Square Feet (24 units)	NYS DOL 12 NYCRR Part 56-11.6 Exterior Project Removal of Non-friable ACM Caulking
		HVAC Caulking White (Caulking at base of HVAC)	+/- 1800 Square Feet	

- B. The Contractor is responsible for completing all notifications and variances required to meet the determined start date (if applicable).
- C. If asbestos containments are required, the Contractor shall establish the asbestos containments so as to not interfere with operation of or access to the temporary equipment that shall be installed by others.
- D. The Contractor shall field verify the amount of ACM and familiarize him/her-self with all variable field conditions in the building before the submission of his/her quote. The quantities presented in this specification are approximate only and should not be used solely as the basis for any quote. Any discrepancies or difference in the approximate and actual quantities shall be resolved before the award of any Contract. No change order relative to ACM material quantity will be permitted after the award of the Contract, unless new areas are added. In the event that suspect materials not included in this Specification are encountered while the work is in progress, such material shall be tested and, if confirmed ACM, removed as ACM, in accordance with the procedures contained herein. The discovery of any new material(s) should not delay the progress of the work as contained in this specification. Payment for any additional work will be considered on a case-by-case basis by the Environmental Consultant and Lakeland CSD. It is the responsibility of the Contractor to determine and negotiate the full cost of any such payment prior to performance of any additional work.

- F. ACM shall be properly handled, packaged, and transported for disposal in a landfill in accordance with all Federal, State and Local regulations. After September 4, 2006, the Contractor shall follow Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56) as amended effective March 21, 2007. All related manifests and shipping logs shall be provided to Lakeland CSD upon or before the end of the project.
- G. All work shall be accomplished in strict adherence to the project Specification, applicable Federal, State, and Local Regulations. Whenever there is a conflict or overlap of the above references, the more stringent provision shall apply.
- H. The Contractor's industrial hygiene practices during asbestos abatement will be monitored by Lakeland CSD's Environmental Consultant. The Contractor shall be responsible for monitoring his/her own construction safety work practices for compliance with the OSHA regulations.
- I. The Asbestos Contractor shall provide the best available technology, and state-of-the-art procedures and methods of execution, clean-up, disposal, and safety.
- J. The Contractor will be required, if approved by Lakeland CSD and/or its Representative, to obtain at his/her own expense appropriate variances from regulatory agencies as required to complete the safe removal of asbestos containing material as described in this specification.
- K. Lakeland CSD's environmental consultant will sample all suspect materials that may be identified during the course of demolition, if applicable. The Contractor shall provide access to the consultant to perform the testing and no additional costs will be paid for the time it takes to perform the testing. The contractor shall provide itemized cost proposal to Lakeland CSD which must include separate costs for the abatement of the individual materials revealed to be ACM (if applicable). Additional asbestos-containing materials shall not be abated without written authorization from Lakeland CSD or environmental consultant. The contractor will not be compensated for any additional materials that can be encountered during the abatement project, without prior written authorization from Lakeland CSD or environmental consultant.

1.02 PHASING OF WORK:

This work shall include asbestos abatement associated with upcoming additions and alteration projects at Copper Beech Middle School. The Asbestos Contractor shall perform and complete the abatement of asbestos-containing materials during regular working hours, Monday through Friday between 8:00 am and 4:00 pm or as directed by the facility. It is the Contractor's responsibility to ensure that acceptable visual inspection and air monitoring results are obtained with fiber count of <70 Structures/mm² of air using AHERA analysis method and are completed prior to the return of building occupants or other trades. All work shall be coordinated with Lakeland CSD and Lakeland CSD's Environmental Consultant prior to start of any work. The Lakeland CSD's Environmental Consultant shall be present whenever any asbestos abatement work is being conducted.

1.03 AUTHORITY TO STOP WORK:

Lakeland CSD and the Environmental Consultant shall have the authority to stop the abatement work at any time the contractor's work is not in conformance with the Specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of Lakeland CSD and the Environmental Consultant. Standby time to resolve the problems shall be at the contractor's expense.

1.04 SITE REQUIREMENTS:

- A. Noise Control: Provide mufflers or other acceptable means of noise reduction for all equipment to be used by the Contractor. Observe local laws regarding noise control.
- B. Wastewater: All water used by the Contractor during asbestos abatement activities shall be collected and passed through a water filtration system capable of filtering particles down to 5 microns prior to being discharged into the sanitary sewer. The Contractor shall contact the Westchester County engineering department to determine the acceptable location(s) to access the sanitary sewer. The Contractor shall be responsible for connection to the sanitary sewer, and for providing piping, pumps, water filtration systems, and other items necessary to collect, transport, filter, and dispose of the wastewater.
- C. Log In/Out: The Asbestos Contractor must ensure all workers log in and out daily at the site.
- D. The location of the Decontamination Unit shall be a location agreed upon between The Asbestos Contractor, Lakeland CSD and Lakeland CSD's environmental consultant. All variations must be coordinated and approved by the site manager and Lakeland CSD's Environmental Consultant.

1.05 HEALTH AND SAFETY:

- A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the air supplied to respirators, or from toxic or damaging vapors or residues resulting from the use of encapsulant and/or wetting agents or other substances used by the Contractor during construction.
- B. Chemical/Biological Hazards: The known chemical/biological hazards on site include asbestos-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.
- C. Physical Hazards: The Contractor shall provide safety equipment and training to his/her workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with

energized (hot) active equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.

- D. Safety Act: The Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, material-men, and subcontractors, and visitors to the project site.
- E. Accident Prevention: In order to protect the lives and health of his/her employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Lakeland CSD and/or its Representatives, and a copy of the Contractor's report to his/her insurer of an accident must be provided to the Lakeland CSD and/or its Representatives.
- F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his/her work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.
- G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.
- H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special instruction or authorization from the Lakeland CSD and/or its Representatives, is hereby permitted to act at his/her discretion.
- I. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages must add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.06 WORK SUPERVISION AND COORDINATION:

- A. Abatement Contractor's Supervisor: From the start of work through to the project completion the Contractor shall have on-site a responsible and competent

supervisor who possesses valid NYSDOL Supervisor certifications. As a minimum, the Asbestos Contractor's Supervisor shall meet the qualifications as required by Article 1.12, for a job supervisor. The Supervisor shall be on site during all working hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.

- B. Quality of Work: The Supervisor shall supervise, inspect and direct the Work competently and efficiently, devoting such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Supervisor shall be responsible to see that Work complies accurately with the Contract Documents, and that all Work installed is of good quality and workmanship.

1.07 SUBMITTALS:

Unless otherwise noted the Contractor shall submit three (3) copies of each APPLICABLE submittal to the Lakeland CSD's Environmental Consultant and its Representatives for review and/or approval. The Contractor shall provide the following:

A. Pre-Project Submittal:

1. Certificates of Insurance naming Lakeland CSD as additional insured.
2. All required bonds. All bonds shall be underwritten by a United States based, preferably New York State, A or B rated bonding company.
3. List of Subcontractors.
4. Health and Safety Plan: Provide a written Health and Safety Plan addressing procedures for work place safety. As a minimum, the following topics shall be addressed in the plan:
 - a. Hazard Communication. Procedure on how physical and health hazards associated with the work are identified and communicated to employees, and name of the person responsible for implementation of the Hazard Communication Program.
 - b. Guidelines for assessment and prevention of heat stress.
 - c. Procedures for using ladders safely.
 - d. Electrical safety procedures.
 - e. Emergency Action Plan: The Contractor shall submit for review a written Emergency Action Plan. This Plan shall outline the contingency actions to be performed for emergencies including fire, accident, power failure, supplied air system failure, breach of work area containment, unexpected asbestos contamination in the site area and on the adjoining grounds, or spilling of asbestos material being hauled to storage and/or disposal. This Plan shall identify the

manner in which emergencies are announced, emergency escape procedures and routes, and procedures to account for all employees after evacuation. The Plan shall identify those persons responsible for fire/life safety duties including the Site Safety Coordinator, persons responsible for fire prevention equipment and the control of fuel source hazards, and the members of the Emergency Response Team (see Paragraph "Emergency Response" of this Section). This Plan shall be readily available for review by all workers.

f. Fall Protection Plan: The Contractor shall submit for review a written Fall Protection Plan. This plan shall outline the actions to be performed to protect personnel when they are working at elevation. The plan shall detail specific fall protection devices to be utilized, training provided to personnel for same and training of designated competent person in charge of and responsible for the elevated work site.

5. Proof of written notifications required by Paragraph "Codes, Permits and Standards" of this Section. Proof that all required permits and variances have been obtained. NYSDOL and EPA project notifications paid in full.

6. Proof of written notification to the local police department, fire department and Facility (include a copy of required by NYS DOL ICR 56 section 563.6a ten day notice) that asbestos abatement work is being conducted. As a minimum, the notification letter shall include the address of the Facility, dates work is to be performed, and drawings indicating the areas to undergo abatement.

7. Documentation of compliance with all requirements of paragraph "Requirements and Qualifications" of this Section. Submittal shall include:

- a. Proof that the job supervisors, foremen, and asbestos abatement workers meet State certification and license requirements.
- b. Proof of a current medical surveillance program for all Contractor's personnel to work on this project.
- c. Completed and notarized Certificate of Worker's Release for each asbestos abatement worker, workers of other trades, or supervisory personnel who enter the work area or otherwise contact ACM.

8. Proof of a respiratory protection program. Submit level of respiratory protection intended for each operation required by the project.

9. Proof of historic airborne fiber data. Submit airborne asbestos fiber monitoring data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data shall include the following for each procedure required by the work: 1. date of measurement; 2. type of work task monitored; 3. methods used

for sample collection and analysis, and; 4. number, duration and results of samples taken.

9. Proof that a landfill site has been located, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials have been made. Provide the name and location of the landfill, and waste transport company, if applicable.
10. Manufacturer's literature on all proposed job related equipment and products to be used on this project. Include Safety Data Sheets (SDS) for encapsulant, fire retardant plastics, mastic remover and other chemicals to be used on this project.
11. A detailed Asbestos Removal and Disposal Work Plan which describes all aspects of the work to be performed for this project. The Plan shall include the following:
 - a. A detailed description of the work area enclosure. Provide shop drawings (with dimensions and locations) of proposed decontamination facilities and work areas. These drawings shall indicate the following: 1) areas to be sealed off and work area boundaries; and 2) proposed layout and location of the decontamination enclosure systems. Include a detailed description of any modifications or changes to be made to the specified negative pressure work area enclosure.
 - b. Specimen of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).

B. During Work Submittal:

1. Schedule of Work Changes: Any changes in the Schedule of Work proposed by the Contractor shall be submitted for approval to Lakeland CSD no later than seven days prior to the commencement date of the proposed change. A revised Schedule shall be submitted at the end of each week.
2. Notarized copy of payroll showing that prevailing wage rates have been paid shall be submitted to the Lakeland CSD on a weekly basis. Contractor shall use DOL form for wage payment.
3. A "Request For Services" form shall be submitted at least 24 hours in advance of required air monitoring tests and inspections to be performed by the Lakeland CSD's Environmental Consultant.
4. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers

to see. A copy of the results shall be given to the Lakeland CSD's Environmental Consultant at the same time.

5. A certified, signed, and completed copy of each "Waste Shipment Record" form used, and receipts from the landfill operator which acknowledge the Contractor's delivery(s) of material, shall be submitted to the Consultant and Engineer within thirty days following removal of ACM from building.
6. A copy of the bound log book.

C. Post Project Submittal:

1. A notarized "Release of Liens" in a form acceptable to the Chappaqua CSD. Use the standard AIA form. Such notarized release of all liens shall certify that all subcontractors, labor suppliers, etc., have been paid their pro rate share of all payments to date, that the contractor has no basis for further claim, and will not make further claim for payment in any account after the first payment is made to him.
2. Proof of payment of prevailing wage rate to direct employees and subcontractor.
3. Notarized copies of a daily log showing the date(s) and time(s) of entrance to and exit from the work area(s) for all persons.
4. Compilation in chronological order of all air monitoring records pertaining to this project.
5. Compilation of all completed and signed Waste Shipment Record forms, bills of lading, or disposal receipts pertaining to this project.
6. Copies of notifications and checks to applicable agencies (see Subparagraph "Pre-Project Submittal Information" of this Section) that the asbestos abatement project has been completed.
7. Contractor shall submit the following items as part of his final submittals: Paid invoice verifications for sub-contractor (for Time and Material job), service contract agreement, insurance certificates, copies of the workers licenses (NYSDOL), and other submittal required for the Specification.

1.08 FIRE PROTECTION AND EMERGENCY EGRESS:

The Contractor shall be responsible to the security and safeguarding of all areas turned over by the facility to the Contractor. The Contractor shall designate to his/her workers and other building occupants a means of egress in case of emergency.

- A. The Contractor shall establish emergency and fire exits from the work area. First aid kit, 2 full sets of protective clothing and respirators shall be provided for use by qualified emergency personnel in the clean room of the decontamination facility.
- B. For full containment only, the Contractor shall provide a secure work area to protect against unauthorized entry into and around the work area. Any hazardous conditions shall be reported to the contractor's Supervisor and the contractor shall correct the hazard immediately. Any intrusion or incident shall be documented in a bound log book which shall be maintained at the project site.

1.09 CLEAN-UP:

- A. Asbestos Related Clean-up: All clean-up work related to asbestos abatement work shall be in strict accordance with general technical requirements and this specification.
- B. Final Site Cleaning: Upon completion of the work, the Contractor shall remove all temporary construction, decontamination facilities, and unused materials placed on site by the Contractor; put the premises in a neat and clean condition; and provide all sweeping, cleaning, and washing required to restore the site to its original condition.

1.10 CODES, PERMITS, AND STANDARDS:

- A. The Contractor shall be solely responsible for compliance with all applicable federal, state (12 NYCRR Part 56 Adopted March 21, 2007), and local laws, ordinances, codes, rules, and regulations which govern asbestos abatement work or hauling and disposal of asbestos waste material. The current issue of each document shall govern. All work shall comply with all applicable codes and regulations as amended.
- B. Before starting the work, the Contractor shall examine the Technical Specification for compliance with codes and regulations applicable to the work and shall immediately report any discrepancy to the Lakeland CSD's Environmental Consultant.
- C. Where conflict among requirements or with these Specifications exists, the more stringent requirements shall apply.

- D. Permits, State Licenses, and Notifications: The Contractor shall be responsible for obtaining necessary permits, variances, state licenses, and certifications of personnel in conjunction with asbestos removal, hauling, and disposition and shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities. Fees and/or charges for these licenses, permits, and notifications shall be paid by the Contractor. Contractor shall use all notification forms where applicable.
1. Agency Notification: At least 10 days prior to commencement of any asbestos removal, the Contractor shall prepare written notification to EPA Region 2, to the New York State Department of Labor (NYSDOL), and all other applicable agencies having jurisdiction. In addition, the Contractor shall be required to obtain any other permits for work covered under this specification including permits required for air sampling.

1.11 TERMINOLOGY:

The following commonly-used terms are defined in the context of these Specifications:

- A. Asbestos Project: Work that involves the removal, encapsulation, enclosure, repair or disturbance of friable or non-friable asbestos, or any handling of asbestos material that may result in the release of asbestos fibers. For the purpose of compliance with this Part, an asbestos project shall include any disturbance of asbestos fibers, and the planning, asbestos survey (as per Subpart 56-5.1), design, background air sampling, inspection, air sampling and oversight of abatement work, cleanup, and the handling of all asbestos material subject to abatement, as well as the supervising of such activities. Installation of friable ACM shall also be considered an asbestos project. An asbestos project starts with Phase I when the planning, asbestos survey, and design work begins or is required to begin. The project shall not be considered completed until Phase II D is complete.
- B. Asbestos-Containing Material (ACM): Any material or product which contains more than 1 percent asbestos.
- C. Aggressive Air Sampling: Air monitoring samples collected while a leaf blower, fans, or other such devices are used to generate air turbulence within the work area.
- D. Air Filtration Device (AFD) - A portable local exhaust system equipped with HEPA filtration, capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.

- E. Air Lock: A system for permitting ingress or egress to the work area while permitting minimal air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways placed a minimum of three feet apart.
- F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's eight-hour time weighted average (TWA) exposure. Area sampling results are reported directly, without calculating the TWA.
- G. Amended Water: Water to which a surfactant has been added.
- H. Asbestos Removal Encapsulant: A chemical solution used in place of amended water during asbestos removal to penetrate, bind, and encapsulate the asbestos-containing material.
- I. Authorized Visitor: Lakeland CSD's Environmental Consultant or representatives of any regulatory or other agency having jurisdiction over the project.
- J. Lakeland CSD's Environmental Consultant: Lakeland CSD's agent who is authorized to exercise general contract administration and industrial hygiene inspection of the work.
- K. Certified Industrial Hygienist (CIH): One certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
- L. Class II asbestos work: Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Class I asbestos work includes the removal of thermal system or surfacing materials.
- M. Competent Person: Definition and responsibilities as set down in 29 CFR 1926.1101(b) and as outlined herein.
- N. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- O. Decontamination Enclosure System: A series of connected rooms for the decontamination of workers (a Personnel Decontamination Enclosure System) or of materials and equipment (Equipment Decontamination Enclosure System).

- P. Equipment Decontamination Enclosure System: A decontamination system for waste materials and equipment, typically consisting of a designated area of the work area, a washroom, and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personnel entry/exit.
- Q. Encapsulant (Sealant): A liquid material which can be applied to ACM and which controls the possible release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- R. Encapsulation: Application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the ambient air.
- S. Enclosure: Procedures necessary to completely enclose ACM behind air-tight, impermeable, permanent barriers.
- T. Excursion Limit (EL): The EL is an airborne concentration of asbestos to which no employee shall be exposed when not using respiratory protection. The EL is 1.0 f/cc as averaged over a 30 minute period.
- U. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
- V. Friable: Any material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, or is capable of being released into the air by hand pressure.
- W. Full Facepiece High Efficiency Respirator (FFHER): A respirator which covers the wearer's entire face from the hairline to below the chin and which is equipped with a HEPA filter.
- X. Half Mask High Efficiency Respirator (HMHER): A respirator which covers one-half of the wearer's face, from the bridge of the nose to below the chin, and is equipped with HEPA filters.
- Y. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of the fibers of 0.3 micrometer or larger in diameter.
- Z. HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment having a UL 586 filter system capable of collecting and retaining asbestos fibers.

- AA. Large Asbestos Project: Large asbestos project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 160 square feet or more of ACM, PACM or asbestos material or 260 linear feet or more of ACM, PACM or asbestos material.
- AB. Lockdown: Procedure of applying an encapsulant as a protective coating or sealant to a surface from which ACM has been removed in order to control and minimize airborne asbestos fiber generation that might result from residual asbestos-containing debris.
- AC. Minor Asbestos Project: Minor project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 10 square feet or less of ACM, PACM or asbestos material or 25 linear feet or less of ACM, PACM or asbestos material.
- AD. Movable Object: A unit of equipment or furniture which can be removed from the work area.
- AE. Plasticize: To cover floors and walls with plastic sheeting as herein specified.
- AF. Permissible Exposure Limit (PEL): The PEL is an airborne concentration of ACM to which no employee shall be exposed when not using respiratory protection. The OSHA PEL is 0.1 f/cc expressed on an 8-hour time weighted average (TWA).
- AG. Personnel Decontamination Enclosure System: A decontamination system for personnel and limited equipment, typically consisting of an equipment room, shower room, and clean room, with an air lock between any two adjacent rooms, and a curtained doorway between the equipment room and the work area, and a curtained doorway between the clean room and the non-work area. The decontamination system serves as the only entrance/exit for the work area.
- AH. Powered Air Purifying Respirator (PAPR): Either a full face-piece, helmet, or hooded respirator that powers breathing air to the wearer after the air has been purified through a HEPA filter.
- AI. Regulated Abatement Work Area: The portion of the restricted area where abatement work actually occurs. For tent work areas, the interior of each tent is a regulated abatement work area. For OSHA Class I and Class II asbestos abatement, the interior of the restricted area containment enclosure is the regulated abatement work area. For exterior non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or containment enclosures, the entire restricted area surrounding the abatement location is considered to be the regulated abatement work area.

- AJ. Removal: The act of removing and transporting asbestos-containing or asbestos-contaminated materials from the work area to a suitable disposal site.
- AK. Small Asbestos Project: Small asbestos project shall mean an asbestos project involving the removal, disturbance, repair, encapsulation enclosure or handling of more than 10 and less than 160 square feet of ACM, PACM or asbestos material or more than 25 and less than 260 linear feet of ACM, PACM or asbestos material.
- AL. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- AM Tent Procedure: A fire retardant polyethylene enclosure that includes walls, ceiling and a floor as required to remove ACM, PACM or asbestos material.
- AN. Type C Respirator: A respirator which supplies air to the wearer from a source outside the work area by means of a compressor.
- AO. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water or asbestos removal encapsulant and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- AP. Work Area: Designated rooms, spaces, or areas of the project where asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area has been sealed, plasticized, and equipped with an airlock entrance or a decontamination enclosure system. A non-contained work area is an isolated or controlled-access area which has not been plasticized.

1.12 REQUIREMENTS AND QUALIFICATIONS:

- A. Minimum Experience: The Contractor shall have experience with abatement work, as evidenced through participation in at least **five** asbestos abatement projects of complexity comparable to this project.
- B. Experience and Training: The Contractor's job supervisors, foremen, and workers shall be adequately trained and knowledgeable in the field of asbestos abatement. All personnel engaged in asbestos abatement or related activities shall have New York State DOL certifications. All phases of the work shall be executed by skilled craftsmen experienced in each respective trade. Proof of such experience shall be submitted upon request by the Lakeland CSD. Improperly trained, untrained, or inexperienced personnel shall not be allowed in the work area(s). Personnel shall meet minimum training and experience requirements outlined in this Section.

1. The Contractor's on-site job supervisor shall have successfully completed, within the last twelve months, the NYSDOH-approved course "Supervision of Asbestos Abatement Projects", and shall be qualified as a NYSDOL-certified Contractor/Supervisor. Course must be provided by an NYSDOH-approved training provider. The supervisor shall have experience with abatement work, as evidenced through participation in at least two asbestos abatement projects of complexity comparable to this project.
 2. The job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos removal and related work and shall meet the requirements of a competent person set down in OSHA Standard 29 CFR 1926.1101.
 3. All asbestos abatement workers shall be knowledgeable, qualified, and trained in the removal, handling, and disposal of asbestos material and in subsequent cleaning of the affected environment. All asbestos abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA Standard 29 CFR 1926.1101(k)(3). Course must be provided by an NYSDOH-approved training provider.
 4. The Contractor's job supervisors, foremen, and asbestos abatement workers shall be certified and licensed as required by the NYSDOL.
 5. Prior to commencement of work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.
- C. Supervision Requirements: The Contractor shall provide adequate job supervision for all phases of the asbestos abatement work.
1. The Contractor shall have a NYSDOL job supervisor present on site whenever work described in this Section is in progress. If the job supervisor leaves the site for any reason a qualified and certified supervisor, who meets the requirements of this Section and is familiar with the current status of the work, shall be designated. Lakeland CSD's Designated Representative shall be informed of the substitution. The supervisor must be familiar and experienced with asbestos removal and its related work, safety procedures, and equipment.

- D. Worker Medical Examinations: The Contractor shall provide medical examinations for all employees engaged in asbestos removal and disposal operations, in accordance with OSHA Standards 29 CFR 1910.134(b), 1926.1101, and applicable state regulations. The Contractor shall ensure that all employee examination results are on file in his office and available for review and are maintained in accordance with OSHA Standard 29 CFR 1926.1101 (n) (3).
- E. Certificate of Worker's Release: Each asbestos abatement worker, workers of other trades, or any supervisory personnel who enter the work area, or otherwise contact ACM, shall submit a Certificate of Worker's Release, as required in the Section "Submittal".

1.13 TESTING AND INSPECTION REQUIREMENTS AND RESPONSIBILITIES:

Visual inspections and air monitoring will be performed before, during, and after asbestos abatement to document airborne asbestos fiber concentrations as defined in this specification.

A. Lakeland CSD's Responsibilities:

- 1. Lakeland CSD will employ an Environmental Consultant to perform Project Monitoring and air testing. The project monitor will have the authority to approve the contractor's work, stop the contractor's work and direct the contractor to take corrective actions where required.
- 2. Area air samples will be collected and analyzed using NIOSH Method 7400. Air samples will be collected during each shift as required by the regulations.
- 3. Clearance testing by Transmission electron microscopy (TEM) will be conducted as per AHERA regulations. Air samples will be collected to demonstrate final re-occupancy clearance for work areas within the building. The fiber concentration must comply with the specified clearance level as per AHERA and this specification. Lakeland CSD will provide for collection and analysis of one round of samples required to demonstrate clearance in each discrete work area.
- 4. Lakeland CSD's Environmental Consultant will perform inspections of the work area, as specified, upon request of the Contractor.

B. Contractor's Responsibilities:

- 1. TEM air samples which fail to meet the re-occupancy clearance standard shall be paid for by the Contractor. Should a delay occur, due to failure(s) of clearance air testing, all associated expenses such as TEM analysis, and the Environmental Consultant's time for additional cleaning and air testing,

shall be paid by the asbestos contractor. If results of the inside work area group of air samples are unsatisfactory, recleaning of regulated abatement work area surfaces using wet methods, followed by another drying time period and then collection and analysis of an additional set (both inside and outside work area samples) of clearance air samples is required. If only the results of the outside work area group of air samples is unsatisfactory, clean-up of surfaces outside of the regulated abatement work area using HEPA-vacuums and wet-cleaning methods shall be performed prior to collection and analysis of an additional group of outside work area clearance air samples as required by ICR 56 Section 56-9.2. This recleaning/clean-up and sampling process shall be repeated until satisfactory clearance air sampling results have been achieved for all asbestos project non-exempt regulated abatement work areas throughout the entire work site.

2. The Contractor, at his/her expense, shall provide OSHA monitoring and all other all tests required by specified applicable regulations, codes, and standards and any other tests for his/her use. The use of a testing laboratory by Lakeland CSD does not release the Contractor from providing tests required for the protection and safety of his/her employees.
3. The Contractor shall employ an independent testing laboratory for analysis of OSHA personal air monitoring samples. The laboratory used for air sample analysis shall be successfully participating in the "Proficiency Analytical Testing (PAT) Program for Laboratory Quality Control for Asbestos." The monitoring shall be supervised by an Industrial Hygienist certified by the American Board of Industrial Hygiene (A.B.I.H.). Each testing laboratory shall be ELAP (Environmental Laboratory Accreditation Program) and NVLAP (National Voluntary Laboratory Accreditation Program) certified. Lakeland CSD shall approve the contractor's testing laboratory.
4. From each work area the Contractor, at his/her expense, shall collect and analyze OSHA personal air monitoring samples. Sampling shall be repeated during each different work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101, Appendix A.
5. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers to see. A copy of the results shall be given to the Lakeland CSD's Environmental Consultant at the same time.

6. The Contractor shall be advised whenever questions arise concerning compliance with standards of quality and completeness of the work, and shall use his/her best efforts to resolve any such questions to the satisfaction of the Lakeland CSD's Environmental Consultant.
 7. Where air monitoring tests and/or inspections are specified, the Contractor shall notify Lakeland CSD's Environmental Consultant, in writing, 24 hours, in advance of the required test and/or inspection.
 8. The Contractor is responsible for ensuring the Work is complete to the level that meets the criteria of the inspection. The Contractor shall perform an inspection of the Work to evaluate completeness prior to requesting an inspection by the Lakeland CSD's Environmental Consultant.
- C. Time Requirements for Lakeland CSD's Environmental Consultant's Inspections and Testing: Where visual inspections or air testing is required to be performed by the Lakeland CSD's Environmental Consultant, the Contractor shall allow for the following response/analytical time for completion of the inspection/test.
1. Where visual inspections are required, allow 24 hours, beginning from the time the Contractor's request is received by the Lakeland CSD's Environmental Consultant, for the performance of the inspection.
 2. Where TEM clearance air monitoring tests are required, allow 24 hours, beginning from the time the Contractor's written request is received by the Lakeland CSD's Environmental Consultant, to the beginning of the air test.

PART 2 - PRODUCTS

2.01 MATERIALS:

Materials provided under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.

- A. Plastic: Provide fire retardant plastic of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints. Fire retardant plastic sheet shall be used for plasticizing the enclosed work area, for preparation of the decontamination enclosure system, and for waste packaging.
- B. Reinforced Fire Retardant Plastic: Provide reinforced polyethylene sheet for the floor area of the decontamination enclosure system. Reinforced plastic sheet provided for this project shall be a 19 mil, 3-ply, high density flame resistant-reinforced-polyethylene sheet. Plastic color shall be opaque.

- C. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water
- D. Surfactant: Surfactant (Wetting Agent) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- E. Lockdown Encapsulants: Encapsulants used after asbestos removal to lockdown fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. A tint shall be given to the encapsulant by means of the addition of non-toxic, nonflammable colorings before application. The encapsulant shall be installed according to the manufacturer's written instructions.
- F. Caulking Sealant: Caulking sealant shall be single component, non-sag elastomer with 1600% elongation capacity. Sealant shall meet the requirements of Federal Specification TT-S-00230C, Class A Type II. Sealant shall be used to form an airtight seal around plywood barriers or temporary partitions, to seal along the seams of the decontamination enclosure system's plywood sheathing, and to seal around piping or other small penetrations of the work area. Sealant application shall be according to the manufacturer's written instructions.
- G. Foam Sealant: Foam Sealant shall be expanding urethane Class 1 foam sealant with an Underwriters Laboratories, Inc. (U.L. 723) flame spread index of 25 or less, smoke developed index of 0, and a minimum operating temperature range between -30°F and 250°F.
- H. Plywood: Plywood used for temporary partitions, decontamination enclosure systems, and tunnels shall be an exterior grade and a minimum 3/8-inch thick.
- I. Spray Adhesive: Spray Aerosol Adhesive shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).
- J. Other Materials: All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be provided. Materials and equipment shall be new or used, uncontaminated by asbestos, in serviceable condition, and appropriate for the intended purpose.
- K. Disposal Bags: Plastic Disposal Bags shall be a minimum of six mils in thickness. Bags shall be labeled in accordance with this Section.

- L. Shipping Containers: Impermeable Containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.
- M. Markings and Labels: Disposal bags and shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to all bags and shipping containers containing ACM, in accordance with OSHA Standard 29 CFR 1926.1101(k)(2), DOT Standard 49 CFR Part 171 and 172, and EPA Standard 40 CFR Part 61.150(a)(1)(v).
 - 1. Danger label format and color shall conform to OSHA Standard 29 CFR 1926.200. Danger labels shall display the following legend/information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD

- 2. DOT Marking and Labels: Markings and labels shall be permanently affixed to all bags and containers containing ACM, in accordance with DOT 49 CFR 172.304 and 172.407.
 - a. Markings shall display the following text:

RQ, ASBESTOS, NA 2212
 - b. Labels shall be diamond shape and shall be located near the Marking text. Labels will consist of a diamond a minimum of 100 millimeters (mm) on each side with each side having a solid line inner boarder 5.0 to 6.3 mm from the edge. The label shall be white with seven black vertical stripes on the top half. Black stripes and white spaces shall be equally spaced. The lower half of the label shall be white with the class number "9" underlined and centered at the bottom. Refer to DOT 40 172.446 for label format.
 - 3. Generator identification information shall be affixed to each DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display the following legend/information:

GENERATOR'S NAME
GENERATOR'S 24 HOUR PHONE
GENERATOR'S FACILITY ADDRESS

- N. Reuse of Containers: If impermeable containers used to transport bagged asbestos waste to the landfill are to be reused, the empty containers shall display the following label:

RESIDUE:
LAST CONTAINED ASBESTOS RQ

- O. Warning Signs: Warning Signs shall be posted at the perimeter of the work area prior to abatement operations in accordance with OSHA Standard 29 CFR 1926.1101. Danger sign format and color shall conform to OSHA Standard 29 CFR 1926.200. The signs shall display the legend indicated below:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

- P. Mastic remover. The contractor shall use an odorless mastic remover. Manufacture and brand of mastic remover shall be approved by the Facility prior to commencing removal work.

2.02 EQUIPMENT:

Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.

- A. Spraying Equipment: Equipment used to apply amended water or removal encapsulant shall be of a low pressure type to prevent disturbance of the asbestos prior to physical controlled removal. Airless spray equipment shall be provided for the application of asbestos encapsulant.
- B. Vehicles: Trucks or Vans used for the transportation of asbestos waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of asbestos-contaminated waste without exposure to persons or property.
- C. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.

- D. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in each decontamination enclosure equipment room, and clean room. Supply 2 additional extinguishers inside the work area
- E. Smoke Detectors: Smoke detectors of the battery powered ionization type will be required at a rate of one per 5,000 square feet, with a minimum of one smoke detector in the decontamination enclosure clean room, and one in the work area.
- F. Water Filtration System: A system capable of filtering and retaining particles larger than 5.0 microns in size shall be provided.
- G. Carts: Provide water tight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged asbestos waste from the decontamination enclosure system to the waste storage container or transport vehicle.
- H. Power Tools: Provide power tools necessary to complete the Work. Power tools used directly for asbestos removal shall be equipped with a dust collection system. Attach a shroud connected to a HEPA vacuum system for capture of dust.

2.03 WORKER PROTECTIVE CLOTHING AND EQUIPMENT:

Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101

- A. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Disposable coveralls, head covers, and 18-inch high boot-type foot covers shall be constructed of material equal to DuPont "TYVEK-Type 14" or Kimberly-Clark "Kleenguard", as a minimum requirement.
 - 1. The Contractor shall provide authorized visitors and the Lakeland CSD's Environmental Consultant suitable properly fitting protective disposable clothing, headgear, hard hats, eye protection, respiratory protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.
- B. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.

- C. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals in the work area. Types of respirators used shall be approved by MSHA/NIOSH for asbestos in accordance with OSHA Standard 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide a level of respiratory protection which supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc), as the minimum level of protection allowed. Determine the proper level of protection by dividing the actual airborne fiber count in the work area by the "protection factors" given below for each respirator type:

<u>Respirator Type</u>	<u>Protection Factor</u>

Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Half-facepiece	10

Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Full-Facepiece	50 (quantitative)

Powered air purifying (PAPR): Positive pressure respirator High efficiency HEPA filter, Full-facepiece	1000

<u>Respirator Type</u>	<u>Protection Factor</u>

Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000

Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000

Type C supplied air: Pressure-demand, Full-facepiece equipped with an auxiliary SCBA	1000

1. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
2. During the use of supplied air systems the Contractor shall provide authorized visitors, Lakeland CSD's Environmental Consultant, and the testing laboratory representative with individually issued and marked respiratory equipment (up to six units). Respiratory equipment shall be compatible with the supplied air system in use, and shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
3. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.
4. Breathing air supply systems shall conform to the USEPA NIOSH Document EPA-560-OPTS-86-001 (September 1986) entitled "A Guide to Respiratory Protection for the Asbestos Abatement Industry."
5. The Contractor shall have a minimum of two spare air hoses with connectors to permit the Lakeland CSD's Environmental Consultant or testing laboratory's representative to connect his/her assigned Type C respirator to the air system at any time without having to wait for personnel to exit the work area in order to obtain a spare hose.

PART 3 - EXECUTION

3.01 DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Personal decontamination system enclosures shall be constructed and functional prior to commencing the regulated abatement work area preparation activities. Waste decontamination system enclosures shall be constructed and functional at the completion of preparation activities. After installation of the personal decontamination system enclosure, all access to the regulated abatement work area shall be via the installed personal decontamination system enclosure.
- B. Personal Decontamination System Enclosure - Large Project.
 - (1) Enclosure – General. A personal decontamination system enclosure shall be provided outside the regulated abatement work area and in close proximity

to all locations where personnel shall enter or exit the regulated abatement work area. One personal decontamination enclosure system for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The personal decontamination system enclosure shall be sized to accommodate the number of workers and equipment required for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, personal decontamination enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance with all federal, state and local government requirements. This system shall remain on-site, operational and be used until completion of Phase II C of the asbestos project.

- (2) Rooms and Configuration. The personal decontamination system enclosure shall consist of a clean room, a shower room and an equipment room connected in series but separated from each other by airlocks. There shall be a curtained doorway separation between the equipment room and the regulated abatement work area, and there shall be a lockable door to the outside. (See Figure 1 within ICR 56) Minimum dimensions for each airlock, shower room and equipment room shall be three (3) feet wide by six (6) feet in height, to allow for adequate access to and from the regulated abatement work area.
- (3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.
- (4) Framing. Enclosures systems accessible to the public shall be fully framed, hard-wall sheathed and utilize a lockable door for safety and security.
- (5) Sheathing. A plywood or oriented strand board (OSB) sheathing material of at least 3/8-inch thickness.

- (6) Plastic Sheetting. Enclosure systems constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for floor protection of this area.
- (7) Prefabricated or Trailer Units. A completely watertight fiberglass or marine painted prefabricated unit does not require plasticizing. Rooms shall be configured as per paragraph (2) of this Section. All prefabricated or trailer decontamination units shall be kept in good condition, and shall be completely decontaminated after final cleaning and immediately prior to clearance air sampling. Upon receiving satisfactory clearance air results, the prefabricated units shall be sealed then separated from the regulated abatement work area and removed from the site.
- (8) Clean Room. The clean room shall be sized to accommodate a full workshift of asbestos abatement contractor personnel, as well as the air sampling technician and the project monitor. The clean room shall be a minimum of six (6) feet in height. A minimum of thirty-two (32) square feet of floor space shall be provided for every six (6) full shift abatement workers, calculated on the basis of the largest work shift. If the largest work shift consists of three (3) or less full shift abatement workers, the minimum clean room size requirement is reduced to twenty-four (24) square feet of floor space. Benches, lockers and hooks shall be provided for street clothes. Shelves for storing respirators shall be provided. Clean clothing, replacement filters for respirators, towels and other necessary items shall be provided. The clean room shall not be used for storage of tools, equipment or materials. It shall not be used for office space. A lockable door shall be provided to permit access to the clean room from outside the regulated abatement work area or enclosure and shall be used to secure the regulated abatement work area and decontamination enclosure during non-work hours.
- (9) Shower Room. The shower room shall contain one (1) shower per every six (6) full shift abatement workers, calculated on the basis of the largest work shift. Multiple showers shall be simultaneously accessible (installed in parallel) to certified personnel. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. Uncontaminated soap, shampoo and towels shall be available at all times. Shower water shall be drained, collected and filtered through a system with at least 5.0-micron particle size collection capability. Submersible pumps shall be installed, maintained and utilized in accordance with pertinent OSHA regulations and manufacturer's recommendations. A multi-stage filtering system containing a series of several filters with progressively smaller pore sizes shall be used

to avoid rapid clogging of the filtering system by larger particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos-contaminated waste.

- (10) Equipment Room. The equipment room shall be used for the storage of decontaminated equipment and tools. A one (1) day supply of replacement filters for HEPA-vacuums and negative pressure ventilation equipment in sealed containers, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement project may also be stored here. A container lined with a labeled, at least six (6) mil plastic bag for collection of clothing shall be located in this room. Contaminated footwear and work clothes shall be stored in this area.
- (11) Airlocks. Airlock construction shall consist of two (2) curtained doorways with three (3) alternating six (6) mil fire retardant polyethylene curtains per doorway, separated by a distance of at least three (3) feet, such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the next doorway. Minimum airlock size shall be three (3) feet wide, by three (3) feet long, by six (6) feet in height.

C. Personal Decontamination System Enclosure - Small Project

- (1) Enclosure Requirements. A personal decontamination system enclosure for a Small asbestos project shall consist of, at a minimum, an equipment room, a shower room and a clean room separated from each other and from the regulated abatement work area and other areas by curtained doorways as defined in ICR 56 Section 56-2.1. All other provisions for personal decontamination system for a Large asbestos project shall apply. Equipment storage, personal gross decontamination and removal of clothing shall occur in the equipment room just prior to entering the shower. (See Figure 4 in the ICR 56) The full personal decontamination system enclosure specified for Large asbestos projects is recommended.

D. Remote Personal Decontamination System Enclosure. If a personal decontamination system cannot be attached to the regulated abatement work area, due to available space restrictions or other building and fire code restrictions, a remote personal decontamination system enclosure may be used for limited Special Projects as per subpart 56-11, negative pressure tent enclosure work areas with glovebag only abatement, or if non-friable ACM is being removed in a manner which will not render the ACM friable.

Limitation. If it is found during removal, that the non-friable ACM or asbestos material will become friable during the removal process, and it is logistically possible to attach the decontamination system enclosure,

abatement work must stop immediately while the remote personal decontamination system is relocated to be attached and contiguous to the regulated abatement work area.

The following requirements apply for all remote personal decontamination systems:

- (1) Protective Clothing. Workers shall don two (2) sets of disposable protective clothing and a supply of protective clothing shall be kept in the airlocks attached to the regulated abatement work area.
- (2) Location. The remote personal decontamination system shall be constructed as close to the regulated abatement work area as physically possible. If the remote personal decontamination system must be located at the exterior of the building/structure due to space or code restrictions, it shall be constructed within fifty (50) feet of the building/structure exit used for access by the asbestos abatement contractor personnel. The decontamination unit shall be cordoned off at a distance of twenty-five (25) feet to separate it from public areas.
- (3) Airlocks. At a minimum, two (2) extra airlocks as defined in ICR 56 Section 56-2.1 shall be constructed as per ICR 56 Section 56-7.5(b)(11). One shall be constructed at the entrance to the equipment room or equipment/washroom. The other extra airlock shall be constructed at the entrance to the containment or regulated abatement work area(s). These airlocks shall have lockable doorways at the entrance to the airlock from uncontaminated areas. These airlocks shall be cordoned off at a distance of twenty-five (25) feet and appropriately signed in accordance with ICR 56 Section 56-7.4(c). Airlocks shall not be used as a waste decontamination area and shall be kept clean and free of asbestos containing material.
- (4) Designated Pathway. The walkway from the regulated abatement work area to the personal decontamination system or next regulated abatement work area shall be cordoned off and signage installed as per ICR 56 Section 56-7.4(c), to delineate it from public areas while in use during Phase IIA through IID.

- (5) Travel Through Uncontaminated Areas. If at any time a worker must travel through an uncontaminated area to access the personal decontamination area, the worker shall HEPA-vacuum and/or wet wipe his/her outer protective clothing while in the regulated abatement work area, then proceed into the airlock, which serves as a changing area, where he/she shall remove the outer clothing and don a clean set of protective clothing. The worker may then proceed to the personal decontamination system enclosure only along a designated pathway as described above. Travel in any other area shall not be allowed.
- (6) Removal. The remote personal decontamination unit shall be removed only after satisfactory clearance air sampling results have been achieved.

E. Waste Decontamination System Enclosure - Large and Small Asbestos Projects.

- (1) Enclosure – General. A waste decontamination system enclosure shall be provided outside the regulated abatement work area and shall be attached to the regulated abatement work area. One (1) waste decontamination enclosure for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The waste decontamination system enclosure shall be sized to accommodate the number of workers and equipment for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance to all federal, state and local government requirements. This system shall remain and be used until completion of Phase II C of the asbestos project.
- (2) Rooms and Configuration. A waste decontamination system enclosure shall consist of a washroom and a holding area connected in series but separated from each other by an airlock. There shall be a lockable door to the outside, and there shall be a curtained doorway between the washroom and the regulated abatement work area. (See Figure 2 in the ICR 56)

- (3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One (1) sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.
- (4) Washroom. A room/chamber between the regulated abatement work area and the holding area in the waste decontamination system enclosure, where equipment and waste containers are wet cleaned or HEPA-vacuumed. Adequate drainage and bag/container wash water shall be provided within the room/chamber, as well as a sufficient quantity of clean waste bags/containers.
- (5) Equipment/Washroom Alternative. Where there is only one (1) exit from the regulated abatement work area, the holding area of the waste decontamination system enclosure may branch off from the equipment room of the personal decontamination system enclosure. The equipment room will also be used as a waste washroom. (See Figure 3 in the ICR 56)
- (6) Plastic Sheeting. Waste decontamination system enclosures constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of these areas.
- (7) Enclosure Security. The waste decontamination system enclosure and regulated abatement work area airlock(s) (when remote decontamination systems are used) shall be constructed with lockable doors to prevent unauthorized entry. Enclosures systems located within twenty-five (25) feet of an area of public access shall be fully framed and hard-wall sheathed for safety.
- (8) Drains. The waste washroom shall be equipped with a wash bin of sufficient size to perform waste

container washing operations and shall have a submersible pump installed to collect waste water and deliver it to the shower wastewater filtration system where it shall be filtered in accordance with paragraph (b)(9) of this Section.

- (9) Shower/Washroom Alternative - Small Asbestos Project. For Small asbestos projects with only one (1) exit from the regulated abatement

work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage, but shall be used for waste transfer to carts, which shall be immediately removed from the enclosure. Waste shall be transferred only during times when the showers are not in use. (See Figure 4 in this Section)

- F. Waste Decontamination System Enclosure – When Remote Personal Is Allowed. When a remote personal decontamination system enclosure is allowed and utilized for a regulated abatement work area, the following requirements shall apply:

- (1) Minor Size Regulated Abatement Work Area. No specific waste decontamination system enclosure is required for minor size regulated abatement work areas. The waste generated shall be immediately bagged/containerized within the regulated abatement work area.
- (2) Small & Large Size Regulated Abatement Work Areas.
 - (i) Washroom. An additional chamber shall be constructed within the regulated abatement work area, attached to the existing airlock used to access the work area. The washroom/airlock combination shall be utilized as the contiguous waste decontamination enclosure for waste bagging/containerization and waste transfer activities. The washroom shall be constructed and supplied with equipment/materials consistent with waste decontamination system enclosure washroom requirements for contiguous personal and waste decontamination system enclosures.
 - (ii) Removal. The washroom chamber shall be removed only after satisfactory clearance air sampling results have been achieved

3.02 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES:

- A. General: The Contractor shall take all safety measures and precautions necessary to protect his/her employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state and city regulations. The Contractor shall be solely responsible for enforcing personnel protection requirements.
1. After the installation of the personal decontamination system, full PPE in compliance with current OSHA regulations shall be worn in regulated abatement work areas during preparation activities, for all friable OSHA Class I or Class II asbestos projects. Asbestos abatement contractor's respirator selection, filter selection, medical surveillance and respiratory training must be consistent with current OSHA regulations. Appropriate respiratory protection is also required of all authorized visitors.
 2. Workers or authorized visitors shall not eat, smoke, drink, or chew gum or other substances while in the work area(s) or decontamination area(s).
 3. Contaminated worker footwear, eye protection, and hard hats shall be stored in the equipment room when not in use in the work area and, upon completion of asbestos abatement, disposed of as asbestos-contaminated waste or decontaminated for reuse.
 4. Entry to the personal and waste decontamination system enclosures shall be restricted to the asbestos contractors involved with the asbestos project, appropriately certified employees of the asbestos contractors, authorized visitors, police, fire and other public safety personnel.
 5. Asbestos workers shall not wear any jewelry; e.g. watch, necklace, etc. while in the work area or decontamination area.
- B. Worker Respiratory Protection: With approval from the Lakeland CSD's Environmental Consultant, historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for the time interval prior to the Contractor establishing the eight-hour time weighted average (TWA) for an abatement task. Historical data provided by the Contractor shall be based on OSHA personal air monitoring of the "breathing zone" of his/her employees for other asbestos abatement projects, and the data were obtained during work operations conducted under work place conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations. Documentation of aforementioned results shall be presented to the Lakeland CSD's Environmental Consultant for review of applicability. (See "Submittal, Pre-Project

Information." This will not relieve the Contractor in providing personal air monitoring to determine the TWA for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101. After the TWA is established, the Contractor may provide respirators as presented in the Specification. The minimum level of protection for TSI and/or Surfacing Materials abatements is full face-piece Powered Air Purifying Respirator (PAPR).

1. Review safety data sheets (SDS) for products to be used during the work. Follow recommendations as given by the product manufacturer for personnel protection required to be worn during product application.
2. Personal Air Monitoring Requirements: The Contractor's CIH shall be responsible for development and implementation of a personal air monitoring program in accordance with OSHA Standard 29 CFR 1926.1101, good industrial hygiene practices, and the requirements herein. Personal air monitoring shall be performed by an independent testing laboratory and supervised by the Contractor's CIH. Documentation of air sampling shall include as a minimum, calculations of minimum sample volume to achieve necessary detection limits; sampling time; sampling location (or subject); evidence of periodic inspection of sampling equipment; documentation of daily pre- and post-calibration of sampling equipment; detailed description of worker protective devices; description of any typical environmental conditions; and a description of work practices/procedures/controls in operation during the sampling period. Documentation of sample analysis shall include, as a minimum, sample identification; total sample duration, sample flow rate; the "Limit of Reliable Quantification"; total air volume; total fibers counted (with work sheets); total fields counted; blank filter analysis; and reticule field area. Airborne fiber concentrations in fibers per cubic centimeter (f/cc) shall be calculated and reported at the 95 percent confidence level.
3. Full-shift personal exposure air sampling of workers shall be performed to establish the 8-hour (TWA) exposure. Such sampling shall be conducted for each employee (or representative group of employees, at least one sample per eight man crew) expected to evidence the highest exposure in each work area for each type of activity on the first shift that site preparation, removal, or cleanup activities occur. Similarly, 30-minute personal exposure air sampling shall be conducted during activities anticipated to produce the highest airborne concentrations to determine the Excursion Limit. Personal exposure sampling shall be repeated everyday as per protocol requirements where removal and cleanup operations are conducted for the duration of the project, or at any time that conditions indicate to the Contractor or the Contractor's CIH that the most recent personal sampling results are no longer indicative of employee exposure. PCM personal samples shall be collected and analyzed according to the

OSHA Reference Method in OSHA Standard 29 CFR 1926.1101, Appendix B.

C. Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing NYSDOL ICR 56-11.7 for Non Friable Flooring and/or Mastic Removal:

The following entry/exit procedures shall be used for gross removal:

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.
2. All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity.
3. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.
4. Each worker or authorized visitor shall, each time he/she leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.
5. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

3.03 PREPARATION OF WORK AREA:

The following Paragraph "General Preparations" outlines procedures applicable to all work areas. Work procedures specific for preparing each asbestos removal area is addressed in its respective Subparagraph. If a site specific variance is approved, procedures outlined in the variance will supercede this specification.

A. General Preparations: The following general preparations shall be used for all work areas being abated:

1. Erect barricades; post notices and warning signs.
 2. Provide and install decontamination enclosure systems in accordance with Article 3.01, "Decontamination Enclosure Systems" of this Section.
 3. Seal drains and other collection devices with 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
 4. Ensure that the Contractor's approved Fall Protection Equipment (if applicable) is in place, in operating condition, and in operation during work described in this section.
 5. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
 6. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels.
 7. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be equipped by manufacture with HEPA filtered local exhaust ventilation.
 8. Hot and cold water may not be available in all work areas. In such cases sufficient heating equipment shall be provided to maintain a necessary supply of hot water for showers.
- B. Friable Asbestos-Containing Pipe/fittings Insulation Tent Work Areas:
1. A decontamination system that complies with Subpart 56-7.5 shall be installed or constructed before any preparatory work in the work area and before any disturbance of asbestos material. The decontamination enclosure system shall be located as close to the work area as possible. The decontamination unit may be mobile.
 2. An airlock and attached washroom constructed of one (1) layer of 6 mil. polyethylene sheeting shall be attached to the work area if a remote decontamination unit is utilized.
 3. The work area, decontamination units, airlocks and dumpster shall be

cordoned off with asbestos warning tape and signs at a distance of ten (10') feet where feasible and shall remain vacated except for certified workers until satisfactory clearance air monitoring results have been achieved.

4. All access areas between the work area and the decontamination enclosure system shall be restricted or cordoned off with caution tape and signage to prevent access of non-certified personnel into the work area.
5. All electric power in the work area shall be shut down and locked out. In the event this is not possible as per 56-7.7 (c), the live electric shall be maintained within those conduits, cables, panels and boxes as per following conditions:
 - a) All live cables, electrical panels and boxes that run through the work areas shall be wrapped with three (3) layers of 6-mil plastic sheeting. Each layer shall be individually taped and sealed separately. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air monitoring results have been obtained.
 - b) Any energized circuits remaining in the work areas shall be posted with a two (2) inch high lettering warning sign which reads: DANGER-LIVE ELECTRICAL-KEEP CLEAR. The sign shall be placed on all live covered barriers at maximum of (10) ten-foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work areas of the existence of the energized circuits.
 - c) All electrical power for the removal project shall be brought into the work area through a separate GFI panel box located outside the work area.
6. Critical/isolation barriers shall be constructed in the Work Area using minimum of two layers of 6-mil polyethylene sheeting and plywood (where required). Alternatively, the contractor has the option to perform the work utilizing a Tent Enclosure. If a Tent enclosure is utilized, it shall be constructed in accordance with IRC 56 Subpart 7.11 (f) (1) (only for drain bowl work areas). The Work Area shall be exhausted utilizing negative air units to achieve six (6) air changes per hour for critical/isolation barrier work areas or four (4) air changes per hour for Tent Enclosure work areas. Sufficient negative air handling equipment shall be utilized on site in order to achieve required negative air pressure within the work area (See Appendix A).
6. A four (4) hour pre-abatement settling period is required prior to commencement of ACM removal activities.

3.04 PRE-REMOVAL INSPECTIONS:

- A. Prior to removal of any ACM the Contractor shall notify the Lakeland CSD's Environmental Consultant and request a pre-removal inspection. Posting of warning signs, plasticizing of work area, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of Lakeland CSD's Environmental Consultant. The Contractor shall not begin asbestos removal until the Lakeland CSD's Environmental Consultant approves the work area preparations.

3.05 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Repair damaged barriers and remedy any defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.
- B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of twice each 8- hour work shift.
- C. Ensure that both hot and cold water exist in sufficient supply for the decontamination enclosure system.

3.06 REMOVAL OF ASBESTOS-CONTAINING MATERIAL:

The Asbestos Contractor shall be responsible for the proper removal of ACM from the Work Area using standard abatement industry removal techniques. The Environmental Consultant or their representative shall observe the Work. Approval of the Asbestos Contractor's abatement techniques is required by the Environmental Consultant to allow for the continuance of work.

- A. Removal of Friable Asbestos-Containing Pipe Insulation/Fittings in Tent Enclosures:
 - 1. Materials removed shall be containerized or immediately wrapped in two (2) layers of six (6) mil fire retardant plastic sheeting and secured air tight prior to transport to the waste decontamination facility. Residual non-friable ACM shall be wet scraped by manual means and HEPA vacuumed and

likewise containerized and secured air tight prior to transport to the waste decontamination facility.

2. Asbestos containing materials will not be allowed to accumulate in the work area

B. Additional Removal Requirements:

1. Lakeland CSD's Environmental Consultant shall issue a stop work order if visible emissions are detected outside the work areas and/or should the fiber count in adjacent non-work areas exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s) causing the increase are corrected, surfaces outside of the work area are decontaminated using HEPA vacuums or wet cleaning techniques and the Contractor receives written notice from Lakeland CSD's Environmental Consultant.

3.07 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES:

- A. Packaging of ACM shall conform to OSHA Standard 29 CFR 1926.1101, DOT 49 CFR 171,172, and 173, EPA Standard 40 CFR Part 61, New York City Department of Sanitation (in relation to transport, storage, and disposal of ACM) and the requirement as heretofore specified. ACM waste shall be placed in a wet condition into properly labeled disposal bags or sealed in two layers of 6-mil plastic sheeting wrapped airtight and properly labeled. Materials to be transported through a non-Work Area building space shall be placed in hard wall shipping containers for handling. Specific requirements for decontamination of waste containers, and load out through the decontamination enclosure systems is outlined below:
- B. Frequency of Waste Removal: Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site. The waste hauler and landfill shall be as indicated on the notifications to regulatory agencies.
- C. Waste Load-out Through Waste Decontamination Unit: Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in a designated part of the Work Area. Move wrapped asbestos waste to the washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.
- D. The clean containerized items shall be moved directly to the Waste Hauler's truck pending load-out to storage or disposal facilities.

- E. Workers who have entered the decontamination enclosure system from the uncontaminated non-work area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.
- F. Thoroughly clean the decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.
- G. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, whether turned inside out or not, shall be handled and disposed of as ACM waste.

3.08 CLEANUP AND CLEARANCE TESTING OF WORK AREAS:

The following cleanup procedures shall be performed during abatement.

- A. Non-Friable Materials
 - 1. Visible accumulations of loose asbestos containing waste material shall be cleaned up using rubber or plastic dustpans and rubber squeegees or HEPA filtered vacuums. Metal shovels may also be used, except in the vicinity of plastic sheeting, critical barriers and isolation barriers, which could be perforated by these tools. To pick up excess water and gross wet debris, a wet-dry HEPA filtered shop vacuum dedicated to asbestos abatement may be used. This cleaning shall be done whenever there is sufficient asbestos waste material to fill a single leak-tight bag/container, or this cleaning shall be done at the end of each work shift whichever shall occur first. Visible debris shall be maintained adequately wet.
 - 2. Work shall stop whenever excessive water accumulation or flooding is present in the area and shall not resume until the water is collected and disposed of properly.
 - 3. Final clean-up and clearance procedures for abatement shall comply with ICR 56 Section 56-9 is to be performed.
 - 4. One (1) (4) hour post-abatement settling/drying periods are required prior to commencement of final air sampling activities for manual wet removals for floor tiles.

5. Air sampling and analysis on asbestos projects conducted under this Section is required. Air sampling and analysis shall then be conducted in accordance with the requirements of ICR 56 Subpart 56-4.

a. A minimum of five TEM air samples will be collected inside and five outside the work area to determine final air clearance re-occupancy. All TEM results must satisfy the clearance criteria for re-occupancy.

b. When the work area passes the re-occupancy test, all controls and seals established shall be removed.

3.09 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE:

- A. Storage of Containerized ACM: As the work progresses, remove sealed and labeled bags of ACM from the Work Area and place in a lockable trailer, dumpster, or other container approved for storage or transport of asbestos waste. The waste container shall be lined with two layers of 6-mil fire retardant plastic on all sides. Asbestos-containing waste shall remain under the positive control of the Asbestos Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access. Containerized ACM shall be removed from the site on a daily basis. Unless specifically approved in writing by the Owner, ACM shall not be permitted to be stored on site during non-working hours.
- B. Sealed and labeled bags or waste wrapped in two layers of plastic sheeting sealed airtight shall be used to transport asbestos-contaminated waste to the landfill. Procedures for hauling and disposal shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations. Procedures for removal from the Work Area and disposal of waste are outlined below:
- C. A properly completed and original "Waste Shipment Record" form shall accompany asbestos waste, which is transported to a disposal site. This form shall be signed and dated by each party who has control over the asbestos waste, and a copy retained by each party as responsibility for the waste is transferred to the next party. All original manifest forms and waste receipts shall be provided to the Architect. The Environmental Consultant shall be provided with copies of all waste manifests.
- D. Trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste container en-route to approved landfill. The interior of the vehicles shall be lined with two layers of 6-mil plastic.
- E. Mark with a visible warning sign during the loading and unloading of asbestos-containing waste all vehicles used to transport the waste material. Danger sign legend, text size, style and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d) (I).

- F. Only sealed plastic bags or completely sealed items shall be deposited in landfill. Damaged, broken sealed windows or leaking plastic bags shall be resealed prior to being deposited in the landfill. Workers shall place asbestos waste in the landfill. Throwing or dumping of containers shall not be allowed. Workers unloading and handling the sealed bags/drums at the disposal site shall wear appropriate personnel protective equipment including respirators and protective clothing.
- G. After the vehicle is unloaded at the landfill, the plastic sheeting that was taped to the floor, sides and top of the truck shall be carefully removed and placed in properly labeled bags for disposal with the rest of the waste.

END OF SECTION

SECTION 020810

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The asbestos abatement contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. The asbestos abatement contractor is responsible for the confirmation of the actual total quantities of the Work. The asbestos abatement contractor shall provide all labor, equipment and materials necessary to complete the Work in accordance with the Contract Documents. All asbestos material is to be disposed of as ACM waste. Quantities indicted below are confirmed asbestos. Please note that several work areas and all quantities will depend on the actual scope of work and how much ceiling area is disturbed that will affected piping.
- B. This work plan has been developed to comply with the regulations under Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56), Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(b)(4), Hazardous Waste Operations and as per contract documents and specifications.

Lakeland High School
1349 E. Main Street, Shrub Oak, New York 10588

1. Drawing H-002.00: First Floor Area

- a. Remove and dispose of asbestos-containing ceiling plaster within Work Area 1. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56 §7 Full containment procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Auditorium	Ceiling Plaster, White Coat	+/- 5,500 square feet	NYSDOL 12 NYCRR Part 56 §7 Full containment procedures

2. Drawing H-002.00: 1st Floor Area

- a. Remove and dispose of asbestos-containing Pipe/fittings, floor tile chalkboard within Work Area 2. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-.11 tent procedures & 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
2		9"x9" Floor Tile & Mastic	+/- 1382 Square Feet	NYSDOL 12 NYCRR Part 56-11.7- Non-Friable Flooring and mastics
		Chalkboard	+/- 32 Square Feet	
		Pipe mudded joints (Above ceiling tiles throughout school or as per the final scope of work)	+/- 80 Linear Feet	NYSDOL 12 NYCRR Part 56-7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT

3. Drawing H-003.00: Roof Area

- a. Remove and dispose of asbestos-containing Caulking within Work Area 3. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-.56-11.6 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
3	Mechanical Room Lower Roof by Gym	Caulking associated with metal door frame-grey	+/- 27 Square Feet	NYSDOL 12 NYCRR Part 56-11.6 Exterior Project Removal of Non-Friabl ACM Roofing, Siding, Caulking, Glazing, Transite and other NOB ACM's

- B. The Contractor is responsible for completing all notifications and variances required to meet the determined start date (if applicable).
- C. If asbestos containments are required, the Contractor shall establish the asbestos containments so as to not interfere with operation of or access to the temporary equipment that shall be installed by others.
- D. The Contractor shall field verify the amount of ACM and familiarize him/her-self with all variable field conditions in the building before the submission of his/her quote. The quantities presented in this specification are approximate only and should not be used solely as the basis for any quote. Any discrepancies or difference in the approximate and actual quantities shall be resolved before the award of any Contract. No change order relative to ACM material quantity will be permitted after the award of the Contract, unless new areas are added. In the event that suspect materials not included in this Specification are encountered while the work is in progress, such material shall be tested and, if confirmed ACM, removed as ACM, in accordance with the procedures contained herein. The discovery of any new material(s) should not delay the progress of the work as contained in this specification. Payment for any additional work will be considered on a case-by-case basis by the Environmental Consultant and Lakeland CSD. It is the responsibility of the Contractor to determine and negotiate the full cost of any such payment prior to performance of any additional work.
- F. ACM shall be properly handled, packaged, and transported for disposal in a landfill in accordance with all Federal, State and Local regulations. After September 4, 2006, the Contractor shall follow Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56) as

amended effective March 21, 2007. All related manifests and shipping logs shall be provided to Lakeland CSD upon or before the end of the project.

- G. All work shall be accomplished in strict adherence to the project Specification, applicable Federal, State, and Local Regulations. Whenever there is a conflict or overlap of the above references, the more stringent provision shall apply.
- H. The Contractor's industrial hygiene practices during asbestos abatement will be monitored by Lakeland CSD's Environmental Consultant. The Contractor shall be responsible for monitoring his/her own construction safety work practices for compliance with the OSHA regulations.
- I. The Asbestos Contractor shall provide the best available technology, and state-of-the-art procedures and methods of execution, clean-up, disposal, and safety.
- J. The Contractor will be required, if approved by Lakeland CSD and/or its Representative, to obtain at his/her own expense appropriate variances from regulatory agencies as required to complete the safe removal of asbestos containing material as described in this specification.
- K. Lakeland CSD's environmental consultant will sample all suspect materials that

may be identified during the course of demolition, if applicable. The Contractor shall provide access to the consultant to perform the testing and no additional costs will be paid for the time it takes to perform the testing. The contractor shall provide itemized cost proposal to Lakeland CSD which must include separate costs for the abatement of the individual materials revealed to be ACM (if applicable). Additional asbestos-containing materials shall not be abated without written authorization from Lakeland CSD or environmental consultant. The contractor will not be compensated for any additional materials that can be encountered during the abatement project, without prior written authorization from Lakeland CSD or environmental consultant.

1.02 PHASING OF WORK:

This work shall include asbestos abatement associated with upcoming additions and alteration projects at Copper Beech Middle School. The Asbestos Contractor shall perform and complete the abatement of asbestos-containing materials during regular working hours, Monday through Friday between 8:00 am and 4:00 pm or as directed by the facility. It is the Contractor's responsibility to ensure that acceptable visual inspection and air monitoring results are obtained with fiber count of <70 Structures/mm² of air using AHERA analysis method and are completed prior to the return of building occupants or other trades. All work shall be coordinated with Lakeland CSD and Lakeland CSD's Environmental Consultant prior to start of any work. The Lakeland CSD's Environmental Consultant shall be present whenever any asbestos abatement work is being conducted.

1.03 AUTHORITY TO STOP WORK:

Lakeland CSD and the Environmental Consultant shall have the authority to stop the abatement work at any time the contractor's work is not in conformance with the Specifications and applicable

regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of Lakeland CSD and the Environmental Consultant. Standby time to resolve the problems shall be at the contractor's expense.

1.04 SITE REQUIREMENTS:

- A. Noise Control: Provide mufflers or other acceptable means of noise reduction for all equipment to be used by the Contractor. Observe local laws regarding noise control.
- B. Wastewater: All water used by the Contractor during asbestos abatement activities shall be collected and passed through a water filtration system capable of filtering particles down to 5 microns prior to being discharged into the sanitary sewer. The Contractor shall contact the Westchester County engineering department to determine the acceptable location(s) to access the sanitary sewer. The Contractor shall be responsible for connection to the sanitary sewer, and for providing piping, pumps, water filtration systems, and other items necessary to collect, transport, filter, and dispose of the wastewater.
- C. Log In/Out: The Asbestos Contractor must ensure all workers log in and out daily at the site.
- D. The location of the Decontamination Unit shall be a location agreed upon between The Asbestos Contractor, Lakeland CSD and Lakeland CSD's environmental consultant. All variations must be coordinated and approved by the site manager and Lakeland CSD's Environmental Consultant.

1.05 HEALTH AND SAFETY:

- A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the air supplied to respirators, or from toxic or damaging vapors or residues resulting from the use of encapsulant and/or wetting agents or other substances used by the Contractor during construction.
- B. Chemical/Biological Hazards: The known chemical/biological hazards on site include asbestos-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.
- C. Physical Hazards: The Contractor shall provide safety equipment and training to his/her workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with energized (hot) active equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.

- D. Safety Act: The Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, material-men, and subcontractors, and visitors to the project site.
- E. Accident Prevention: In order to protect the lives and health of his/her employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Lakeland CSD and/or its Representatives, and a copy of the Contractor's report to his/her insurer of an accident must be provided to the Lakeland CSD and/or its Representatives.
- F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his/her work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.
- G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.
- H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special instruction or authorization from the Lakeland CSD and/or its Representatives, is hereby permitted to act at his/her discretion.
- I. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages must add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.06 WORK SUPERVISION AND COORDINATION:

- A. Abatement Contractor's Supervisor: From the start of work through to the project completion the Contractor shall have on-site a responsible and competent supervisor who possesses valid NYSDOL Supervisor certifications. As a minimum, the Asbestos Contractor's Supervisor shall meet the qualifications as required by Article 1.12, for a job supervisor. The Supervisor shall be on site during all working

hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.

- B. Quality of Work: The Supervisor shall supervise, inspect and direct the Work competently and efficiently, devoting such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Supervisor shall be responsible to see that Work complies accurately with the Contract Documents, and that all Work installed is of good quality and workmanship.

1.07 SUBMITTALS:

Unless otherwise noted the Contractor shall submit three (3) copies of each APPLICABLE submittal to the Lakeland CSD's Environmental Consultant and its Representatives for review and/or approval. The Contractor shall provide the following:

A. Pre-Project Submittal:

1. Certificates of Insurance naming Lakeland CSD as additional insured.
2. All required bonds. All bonds shall be underwritten by a United States based, preferably New York State, A or B rated bonding company.
3. List of Subcontractors.
4. Health and Safety Plan: Provide a written Health and Safety Plan addressing procedures for work place safety. As a minimum, the following topics shall be addressed in the plan:
 - a. Hazard Communication. Procedure on how physical and health hazards associated with the work are identified and communicated to employees, and name of the person responsible for implementation of the Hazard Communication Program.
 - b. Guidelines for assessment and prevention of heat stress.
 - c. Procedures for using ladders safely.
 - d. Electrical safety procedures.
 - e. Emergency Action Plan: The Contractor shall submit for review a written Emergency Action Plan. This Plan shall outline the contingency actions to be performed for emergencies including fire, accident, power failure, supplied air system failure, breach of work area containment, unexpected asbestos contamination in the site area and on the adjoining grounds, or spilling of asbestos material being hauled to storage and/or disposal. This Plan shall identify the manner in which emergencies are announced, emergency escape procedures and routes, and procedures to account for all employees after evacuation. The Plan shall identify those persons responsible

for fire/life safety duties including the Site Safety Coordinator, persons responsible for fire prevention equipment and the control of fuel source hazards, and the members of the Emergency Response Team (see Paragraph "Emergency Response" of this Section). This Plan shall be readily available for review by all workers.

f. Fall Protection Plan: The Contractor shall submit for review a written Fall Protection Plan. This plan shall outline the actions to be performed to protect personnel when they are working at elevation. The plan shall detail specific fall protection devices to be utilized, training provided to personnel for same and training of designated competent person in charge of and responsible for the elevated work site.

5. Proof of written notifications required by Paragraph "Codes, Permits and Standards" of this Section. Proof that all required permits and variances have been obtained. NYSDOL and EPA project notifications paid in full.

6. Proof of written notification to the local police department, fire department and Facility (include a copy of required by NYS DOL ICR 56 section 563.6a ten day notice) that asbestos abatement work is being conducted. As a minimum, the notification letter shall include the address of the Facility, dates work is to be performed, and drawings indicating the areas to undergo abatement.

7. Documentation of compliance with all requirements of paragraph "Requirements and Qualifications" of this Section. Submittal shall include:

- a. Proof that the job supervisors, foremen, and asbestos abatement workers meet State certification and license requirements.
- b. Proof of a current medical surveillance program for all Contractor's personnel to work on this project.
- c. Completed and notarized Certificate of Worker's Release for each asbestos abatement worker, workers of other trades, or supervisory personnel who enter the work area or otherwise contact ACM.

8. Proof of a respiratory protection program. Submit level of respiratory protection intended for each operation required by the project.

9. Proof of historic airborne fiber data. Submit airborne asbestos fiber monitoring data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data shall include the following for each procedure required by the work: 1. date of measurement; 2. type of work task monitored; 3. methods used for sample collection and analysis, and; 4. number, duration and results of samples taken.

9. Proof that a landfill site has been located, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials

have been made. Provide the name and location of the landfill, and waste transport company, if applicable.

10. Manufacturer's literature on all proposed job related equipment and products to be used on this project. Include Safety Data Sheets (SDS) for encapsulant, fire retardant plastics, mastic remover and other chemicals to be used on this project.
11. A detailed Asbestos Removal and Disposal Work Plan which describes all aspects of the work to be performed for this project. The Plan shall include the following:
 - a. A detailed description of the work area enclosure. Provide shop drawings (with dimensions and locations) of proposed decontamination facilities and work areas. These drawings shall indicate the following: 1) areas to be sealed off and work area boundaries; and 2) proposed layout and location of the decontamination enclosure systems. Include a detailed description of any modifications or changes to be made to the specified negative pressure work area enclosure.
 - b. Specimen of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).

B. During Work Submittal:

1. Schedule of Work Changes: Any changes in the Schedule of Work proposed by the Contractor shall be submitted for approval to Lakeland CSD no later than seven days prior to the commencement date of the proposed change. A revised Schedule shall be submitted at the end of each week.
2. Notarized copy of payroll showing that prevailing wage rates have been paid shall be submitted to the Lakeland CSD on a weekly basis. Contractor shall use DOL form for wage payment.
3. A "Request For Services" form shall be submitted at least 24 hours in advance of required air monitoring tests and inspections to be performed by the Lakeland CSD's Environmental Consultant.
4. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers to see. A copy of the results shall be given to the Lakeland CSD's Environmental Consultant at the same time.
5. A certified, signed, and completed copy of each "Waste Shipment Record" form used, and receipts from the landfill operator which acknowledge the

Contractor's delivery(s) of material, shall be submitted to the Consultant and Engineer within thirty days following removal of ACM from building.

6. A copy of the bound log book.

C. Post Project Submittal:

1. A notarized "Release of Liens" in a form acceptable to the Chappaqua CSD. Use the standard AIA form. Such notarized release of all liens shall certify that all subcontractors, labor suppliers, etc., have been paid their pro rate share of all payments to date, that the contractor has no basis for further claim, and will not make further claim for payment in any account after the first payment is made to him.
2. Proof of payment of prevailing wage rate to direct employees and subcontractor.
3. Notarized copies of a daily log showing the date(s) and time(s) of entrance to and exit from the work area(s) for all persons.
4. Compilation in chronological order of all air monitoring records pertaining to this project.
5. Compilation of all completed and signed Waste Shipment Record forms, bills of lading, or disposal receipts pertaining to this project.
6. Copies of notifications and checks to applicable agencies (see Subparagraph "Pre-Project Submittal Information" of this Section) that the asbestos abatement project has been completed.
7. Contractor shall submit the following items as part of his final submittals: Paid invoice verifications for sub-contractor (for Time and Material job), service contract agreement, insurance certificates, copies of the workers licenses (NYSDOL), and other submittal required for the Specification.

1.08 FIRE PROTECTION AND EMERGENCY EGRESS:

The Contractor shall be responsible to the security and safeguarding of all areas turned over by the facility to the Contractor. The Contractor shall designate to his/her workers and other building occupants a means of egress in case of emergency.

- A. The Contractor shall establish emergency and fire exits from the work area. First aid kit, 2 full sets of protective clothing and respirators shall be provided for use by qualified emergency personnel in the clean room of the decontamination facility.
- B. For full containment only, the Contractor shall provide a secure work area to protect against unauthorized entry into and around the work area. Any hazardous conditions shall be reported to the contractor's Supervisor and the contractor shall correct the hazard immediately. Any intrusion or incident shall be documented in a bound log book which shall be maintained at the project site.

1.09 CLEAN-UP:

- A. Asbestos Related Clean-up: All clean-up work related to asbestos abatement work shall be in strict accordance with general technical requirements and this specification.
- B. Final Site Cleaning: Upon completion of the work, the Contractor shall remove all temporary construction, decontamination facilities, and unused materials placed on site by the Contractor; put the premises in a neat and clean condition; and provide all sweeping, cleaning, and washing required to restore the site to its original condition.

1.10 CODES, PERMITS, AND STANDARDS:

- A. The Contractor shall be solely responsible for compliance with all applicable federal, state (12 NYCRR Part 56 Adopted March 21, 2007), and local laws, ordinances, codes, rules, and regulations which govern asbestos abatement work or hauling and disposal of asbestos waste material. The current issue of each document shall govern. All work shall comply with all applicable codes and regulations as amended.
- B. Before starting the work, the Contractor shall examine the Technical Specification for compliance with codes and regulations applicable to the work and shall immediately report any discrepancy to the Lakeland CSD's Environmental Consultant.
- C. Where conflict among requirements or with these Specifications exists, the more stringent requirements shall apply.

- D. Permits, State Licenses, and Notifications: The Contractor shall be responsible for obtaining necessary permits, variances, state licenses, and certifications of personnel in conjunction with asbestos removal, hauling, and disposition and shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities. Fees and/or charges for these licenses, permits, and notifications shall be paid by the Contractor. Contractor shall use all notification forms where applicable.
1. Agency Notification: At least 10 days prior to commencement of any asbestos removal, the Contractor shall prepare written notification to EPA Region 2, to the New York State Department of Labor (NYSDOL), and all other applicable agencies having jurisdiction. In addition, the Contractor shall be required to obtain any other permits for work covered under this specification including permits required for air sampling.

1.11 TERMINOLOGY:

The following commonly-used terms are defined in the context of these Specifications:

- A. Asbestos Project: Work that involves the removal, encapsulation, enclosure, repair or disturbance of friable or non-friable asbestos, or any handling of asbestos material that may result in the release of asbestos fibers. For the purpose of compliance with this Part, an asbestos project shall include any disturbance of asbestos fibers, and the planning, asbestos survey (as per Subpart 56-5.1), design, background air sampling, inspection, air sampling and oversight of abatement work, cleanup, and the handling of all asbestos material subject to abatement, as well as the supervising of such activities. Installation of friable ACM shall also be considered an asbestos project. An asbestos project starts with Phase I when the planning, asbestos survey, and design work begins or is required to begin. The project shall not be considered completed until Phase II D is complete.
- B. Asbestos-Containing Material (ACM): Any material or product which contains more than 1 percent asbestos.
- C. Aggressive Air Sampling: Air monitoring samples collected while a leaf blower, fans, or other such devices are used to generate air turbulence within the work area.
- D. Air Filtration Device (AFD) - A portable local exhaust system equipped with HEPA filtration, capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.

- E. Air Lock: A system for permitting ingress or egress to the work area while permitting minimal air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways placed a minimum of three feet apart.
- F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's eight-hour time weighted average (TWA) exposure. Area sampling results are reported directly, without calculating the TWA.
- G. Amended Water: Water to which a surfactant has been added.
- H. Asbestos Removal Encapsulant: A chemical solution used in place of amended water during asbestos removal to penetrate, bind, and encapsulate the asbestos-containing material.
- I. Authorized Visitor: Lakeland CSD's Environmental Consultant or representatives of any regulatory or other agency having jurisdiction over the project.
- J. Lakeland CSD's Environmental Consultant: Lakeland CSD's agent who is authorized to exercise general contract administration and industrial hygiene inspection of the work.
- K. Certified Industrial Hygienist (CIH): One certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
- L. Class II asbestos work: Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Class I asbestos work includes the removal of thermal system or surfacing materials.
- M. Competent Person: Definition and responsibilities as set down in 29 CFR 1926.1101(b) and as outlined herein.
- N. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- O. Decontamination Enclosure System: A series of connected rooms for the decontamination of workers (a Personnel Decontamination Enclosure System) or of materials and equipment (Equipment Decontamination Enclosure System).

- P. Equipment Decontamination Enclosure System: A decontamination system for waste materials and equipment, typically consisting of a designated area of the work area, a washroom, and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personnel entry/exit.
- Q. Encapsulant (Sealant): A liquid material which can be applied to ACM and which controls the possible release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- R. Encapsulation: Application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the ambient air.
- S. Enclosure: Procedures necessary to completely enclose ACM behind air-tight, impermeable, permanent barriers.
- T. Excursion Limit (EL): The EL is an airborne concentration of asbestos to which no employee shall be exposed when not using respiratory protection. The EL is 1.0 f/cc as averaged over a 30 minute period.
- U. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
- V. Friable: Any material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, or is capable of being released into the air by hand pressure.
- W. Full Facepiece High Efficiency Respirator (FFHER): A respirator which covers the wearer's entire face from the hairline to below the chin and which is equipped with a HEPA filter.
- X. Half Mask High Efficiency Respirator (HMHER): A respirator which covers one-half of the wearer's face, from the bridge of the nose to below the chin, and is equipped with HEPA filters.
- Y. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of the fibers of 0.3 micrometer or larger in diameter.
- Z. HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment having a UL 586 filter system capable of collecting and retaining asbestos fibers.

- AA. Large Asbestos Project: Large asbestos project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 160 square feet or more of ACM, PACM or asbestos material or 260 linear feet or more of ACM, PACM or asbestos material.
- AB. Lockdown: Procedure of applying an encapsulant as a protective coating or sealant to a surface from which ACM has been removed in order to control and minimize airborne asbestos fiber generation that might result from residual asbestos-containing debris.
- AC. Minor Asbestos Project: Minor project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 10 square feet or less of ACM, PACM or asbestos material or 25 linear feet or less of ACM, PACM or asbestos material.
- AD. Movable Object: A unit of equipment or furniture which can be removed from the work area.
- AE. Plasticize: To cover floors and walls with plastic sheeting as herein specified.
- AF. Permissible Exposure Limit (PEL): The PEL is an airborne concentration of ACM to which no employee shall be exposed when not using respiratory protection. The OSHA PEL is 0.1 f/cc expressed on an 8-hour time weighted average (TWA).
- AG. Personnel Decontamination Enclosure System: A decontamination system for personnel and limited equipment, typically consisting of an equipment room, shower room, and clean room, with an air lock between any two adjacent rooms, and a curtained doorway between the equipment room and the work area, and a curtained doorway between the clean room and the non-work area. The decontamination system serves as the only entrance/exit for the work area.
- AH. Powered Air Purifying Respirator (PAPR): Either a full face-piece, helmet, or hooded respirator that powers breathing air to the wearer after the air has been purified through a HEPA filter.
- AI. Regulated Abatement Work Area: The portion of the restricted area where abatement work actually occurs. For tent work areas, the interior of each tent is a regulated abatement work area. For OSHA Class I and Class II asbestos abatement, the interior of the restricted area containment enclosure is the regulated abatement work area. For exterior non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or containment enclosures, the entire restricted area surrounding the abatement location is considered to be the regulated abatement work area.

- AJ. Removal: The act of removing and transporting asbestos-containing or asbestos-contaminated materials from the work area to a suitable disposal site.
- AK. Small Asbestos Project: Small asbestos project shall mean an asbestos project involving the removal, disturbance, repair, encapsulation enclosure or handling of more than 10 and less than 160 square feet of ACM, PACM or asbestos material or more than 25 and less than 260 linear feet of ACM, PACM or asbestos material.
- AL. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- AM Tent Procedure: A fire retardant polyethylene enclosure that includes walls, ceiling and a floor as required to remove ACM, PACM or asbestos material.
- AN. Type C Respirator: A respirator which supplies air to the wearer from a source outside the work area by means of a compressor.
- AO. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water or asbestos removal encapsulant and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- AP. Work Area: Designated rooms, spaces, or areas of the project where asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area has been sealed, plasticized, and equipped with an airlock entrance or a decontamination enclosure system. A non-contained work area is an isolated or controlled-access area which has not been plasticized.

1.12 REQUIREMENTS AND QUALIFICATIONS:

- A. Minimum Experience: The Contractor shall have experience with abatement work, as evidenced through participation in at least **five** asbestos abatement projects of complexity comparable to this project.
- B. Experience and Training: The Contractor's job supervisors, foremen, and workers shall be adequately trained and knowledgeable in the field of asbestos abatement. All personnel engaged in asbestos abatement or related activities shall have New York State DOL certifications. All phases of the work shall be executed by skilled craftsmen experienced in each respective trade. Proof of such experience shall be submitted upon request by the Lakeland CSD. Improperly trained, untrained, or inexperienced personnel shall not be allowed in the work area(s). Personnel shall meet minimum training and experience requirements outlined in this Section.

1. The Contractor's on-site job supervisor shall have successfully completed, within the last twelve months, the NYSDOH-approved course "Supervision of Asbestos Abatement Projects", and shall be qualified as a NYSDOL-certified Contractor/Supervisor. Course must be provided by an NYSDOH-approved training provider. The supervisor shall have experience with abatement work, as evidenced through participation in at least two asbestos abatement projects of complexity comparable to this project.
 2. The job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos removal and related work and shall meet the requirements of a competent person set down in OSHA Standard 29 CFR 1926.1101.
 3. All asbestos abatement workers shall be knowledgeable, qualified, and trained in the removal, handling, and disposal of asbestos material and in subsequent cleaning of the affected environment. All asbestos abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA Standard 29 CFR 1926.1101(k)(3). Course must be provided by an NYSDOH-approved training provider.
 4. The Contractor's job supervisors, foremen, and asbestos abatement workers shall be certified and licensed as required by the NYSDOL.
 5. Prior to commencement of work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.
- C. Supervision Requirements: The Contractor shall provide adequate job supervision for all phases of the asbestos abatement work.
1. The Contractor shall have a NYSDOL job supervisor present on site whenever work described in this Section is in progress. If the job supervisor leaves the site for any reason a qualified and certified supervisor, who meets the requirements of this Section and is familiar with the current status of the work, shall be designated. Lakeland CSD's Designated Representative shall be informed of the substitution. The supervisor must be familiar and experienced with asbestos removal and its related work, safety procedures, and equipment.

- D. Worker Medical Examinations: The Contractor shall provide medical examinations for all employees engaged in asbestos removal and disposal operations, in accordance with OSHA Standards 29 CFR 1910.134(b), 1926.1101, and applicable state regulations. The Contractor shall ensure that all employee examination results are on file in his office and available for review and are maintained in accordance with OSHA Standard 29 CFR 1926.1101 (n) (3).
- E. Certificate of Worker's Release: Each asbestos abatement worker, workers of other trades, or any supervisory personnel who enter the work area, or otherwise contact ACM, shall submit a Certificate of Worker's Release, as required in the Section "Submittal".

1.13 TESTING AND INSPECTION REQUIREMENTS AND RESPONSIBILITIES:

Visual inspections and air monitoring will be performed before, during, and after asbestos abatement to document airborne asbestos fiber concentrations as defined in this specification.

A. Lakeland CSD's Responsibilities:

- 1. Lakeland CSD will employ an Environmental Consultant to perform Project Monitoring and air testing. The project monitor will have the authority to approve the contractor's work, stop the contractor's work and direct the contractor to take corrective actions where required.
- 2. Area air samples will be collected and analyzed using NIOSH Method 7400. Air samples will be collected during each shift as required by the regulations.
- 3. Clearance testing by Transmission electron microscopy (TEM) will be conducted as per AHERA regulations. Air samples will be collected to demonstrate final re-occupancy clearance for work areas within the building. The fiber concentration must comply with the specified clearance level as per AHERA and this specification. Lakeland CSD will provide for collection and analysis of one round of samples required to demonstrate clearance in each discrete work area.
- 4. Lakeland CSD's Environmental Consultant will perform inspections of the work area, as specified, upon request of the Contractor.

B. Contractor's Responsibilities:

- 1. TEM air samples which fail to meet the re-occupancy clearance standard shall be paid for by the Contractor. Should a delay occur, due to failure(s) of clearance air testing, all associated expenses such as TEM analysis, and the Environmental Consultant's time for additional cleaning and air testing,

shall be paid by the asbestos contractor. If results of the inside work area group of air samples are unsatisfactory, recleaning of regulated abatement work area surfaces using wet methods, followed by another drying time period and then collection and analysis of an additional set (both inside and outside work area samples) of clearance air samples is required. If only the results of the outside work area group of air samples is unsatisfactory, clean-up of surfaces outside of the regulated abatement work area using HEPA-vacuums and wet-cleaning methods shall be performed prior to collection and analysis of an additional group of outside work area clearance air samples as required by ICR 56 Section 56-9.2. This recleaning/clean-up and sampling process shall be repeated until satisfactory clearance air sampling results have been achieved for all asbestos project non-exempt regulated abatement work areas throughout the entire work site.

2. The Contractor, at his/her expense, shall provide OSHA monitoring and all other all tests required by specified applicable regulations, codes, and standards and any other tests for his/her use. The use of a testing laboratory by Lakeland CSD does not release the Contractor from providing tests required for the protection and safety of his/her employees.
3. The Contractor shall employ an independent testing laboratory for analysis of OSHA personal air monitoring samples. The laboratory used for air sample analysis shall be successfully participating in the "Proficiency Analytical Testing (PAT) Program for Laboratory Quality Control for Asbestos." The monitoring shall be supervised by an Industrial Hygienist certified by the American Board of Industrial Hygiene (A.B.I.H.). Each testing laboratory shall be ELAP (Environmental Laboratory Accreditation Program) and NVLAP (National Voluntary Laboratory Accreditation Program) certified. Lakeland CSD shall approve the contractor's testing laboratory.
4. From each work area the Contractor, at his/her expense, shall collect and analyze OSHA personal air monitoring samples. Sampling shall be repeated during each different work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101, Appendix A.
5. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers to see. A copy of the results shall be given to the Lakeland CSD's Environmental Consultant at the same time.

6. The Contractor shall be advised whenever questions arise concerning compliance with standards of quality and completeness of the work, and shall use his/her best efforts to resolve any such questions to the satisfaction of the Lakeland CSD's Environmental Consultant.
 7. Where air monitoring tests and/or inspections are specified, the Contractor shall notify Lakeland CSD's Environmental Consultant, in writing, 24 hours, in advance of the required test and/or inspection.
 8. The Contractor is responsible for ensuring the Work is complete to the level that meets the criteria of the inspection. The Contractor shall perform an inspection of the Work to evaluate completeness prior to requesting an inspection by the Lakeland CSD's Environmental Consultant.
- C. Time Requirements for Lakeland CSD's Environmental Consultant's Inspections and Testing: Where visual inspections or air testing is required to be performed by the Lakeland CSD's Environmental Consultant, the Contractor shall allow for the following response/analytical time for completion of the inspection/test.
1. Where visual inspections are required, allow 24 hours, beginning from the time the Contractor's request is received by the Lakeland CSD's Environmental Consultant, for the performance of the inspection.
 2. Where TEM clearance air monitoring tests are required, allow 24 hours, beginning from the time the Contractor's written request is received by the Lakeland CSD's Environmental Consultant, to the beginning of the air test.

PART 2 - PRODUCTS

2.01 MATERIALS:

Materials provided under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.

- A. Plastic: Provide fire retardant plastic of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints. Fire retardant plastic sheet shall be used for plasticizing the enclosed work area, for preparation of the decontamination enclosure system, and for waste packaging.
- B. Reinforced Fire Retardant Plastic: Provide reinforced polyethylene sheet for the floor area of the decontamination enclosure system. Reinforced plastic sheet provided for this project shall be a 19 mil, 3-ply, high density flame resistant-reinforced-polyethylene sheet. Plastic color shall be opaque.

- C. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water
- D. Surfactant: Surfactant (Wetting Agent) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- E. Lockdown Encapsulants: Encapsulants used after asbestos removal to lockdown fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. A tint shall be given to the encapsulant by means of the addition of non-toxic, nonflammable colorings before application. The encapsulant shall be installed according to the manufacturer's written instructions.
- F. Caulking Sealant: Caulking sealant shall be single component, non-sag elastomer with 1600% elongation capacity. Sealant shall meet the requirements of Federal Specification TT-S-00230C, Class A Type II. Sealant shall be used to form an airtight seal around plywood barriers or temporary partitions, to seal along the seams of the decontamination enclosure system's plywood sheathing, and to seal around piping or other small penetrations of the work area. Sealant application shall be according to the manufactures written instructions.
- G. Foam Sealant: Foam Sealant shall be expanding urethane Class 1 foam sealant with an Underwriters Laboratories, Inc. (U.L. 723) flame spread index of 25 or less, smoke developed index of 0, and a minimum operating temperature range between -30°F and 250°F.
- H. Plywood: Plywood used for temporary partitions, decontamination enclosure systems, and tunnels shall be an exterior grade and a minimum 3/8-inch thick.
- I. Spray Adhesive: Spray Aerosol Adhesive shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).
- J. Other Materials: All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be provided. Materials and equipment shall be new or used, uncontaminated by asbestos, in serviceable condition, and appropriate for the intended purpose.
- K. Disposal Bags: Plastic Disposal Bags shall be a minimum of six mils in thickness. Bags shall be labeled in accordance with this Section.

- L. Shipping Containers: Impermeable Containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.
- M. Markings and Labels: Disposal bags and shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to all bags and shipping containers containing ACM, in accordance with OSHA Standard 29 CFR 1926.1101(k)(2), DOT Standard 49 CFR Part 171 and 172, and EPA Standard 40 CFR Part 61.150(a)(1)(v).
 - 1. Danger label format and color shall conform to OSHA Standard 29 CFR 1926.200. Danger labels shall display the following legend/information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD

- 2. DOT Marking and Labels: Markings and labels shall be permanently affixed to all bags and containers containing ACM, in accordance with DOT 49 CFR 172.304 and 172.407.
 - a. Markings shall display the following text:

RQ, ASBESTOS, NA 2212
 - b. Labels shall be diamond shape and shall be located near the Marking text. Labels will consist of a diamond a minimum of 100 millimeters (mm) on each side with each side having a solid line inner boarder 5.0 to 6.3 mm from the edge. The label shall be white with seven black vertical stripes on the top half. Black stripes and white spaces shall be equally spaced. The lower half of the label shall be white with the class number "9" underlined and centered at the bottom. Refer to DOT 40 172.446 for label format.
 - 3. Generator identification information shall be affixed to each DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display the following legend/information:

GENERATOR'S NAME
GENERATOR'S 24 HOUR PHONE
GENERATOR'S FACILITY ADDRESS

- N. Reuse of Containers: If impermeable containers used to transport bagged asbestos waste to the landfill are to be reused, the empty containers shall display the following label:

RESIDUE:
LAST CONTAINED ASBESTOS RQ

- O. Warning Signs: Warning Signs shall be posted at the perimeter of the work area prior to abatement operations in accordance with OSHA Standard 29 CFR 1926.1101. Danger sign format and color shall conform to OSHA Standard 29 CFR 1926.200. The signs shall display the legend indicated below:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

- P. Mastic remover. The contractor shall use an odorless mastic remover. Manufacture and brand of mastic remover shall be approved by the Facility prior to commencing removal work.

2.02 EQUIPMENT:

Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.

- A. Spraying Equipment: Equipment used to apply amended water or removal encapsulant shall be of a low pressure type to prevent disturbance of the asbestos prior to physical controlled removal. Airless spray equipment shall be provided for the application of asbestos encapsulant.
- B. Vehicles: Trucks or Vans used for the transportation of asbestos waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of asbestos-contaminated waste without exposure to persons or property.
- C. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.

- D. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in each decontamination enclosure equipment room, and clean room. Supply 2 additional extinguishers inside the work area
- E. Smoke Detectors: Smoke detectors of the battery powered ionization type will be required at a rate of one per 5,000 square feet, with a minimum of one smoke detector in the decontamination enclosure clean room, and one in the work area.
- F. Water Filtration System: A system capable of filtering and retaining particles larger than 5.0 microns in size shall be provided.
- G. Carts: Provide water tight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged asbestos waste from the decontamination enclosure system to the waste storage container or transport vehicle.
- H. Power Tools: Provide power tools necessary to complete the Work. Power tools used directly for asbestos removal shall be equipped with a dust collection system. Attach a shroud connected to a HEPA vacuum system for capture of dust.

2.03 WORKER PROTECTIVE CLOTHING AND EQUIPMENT:

Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101

- A. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Disposable coveralls, head covers, and 18-inch high boot-type foot covers shall be constructed of material equal to DuPont "TYVEK-Type 14" or Kimberly-Clark "Kleenguard", as a minimum requirement.
 - 1. The Contractor shall provide authorized visitors and the Lakeland CSD's Environmental Consultant suitable properly fitting protective disposable clothing, headgear, hard hats, eye protection, respiratory protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.
- B. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.

- C. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals in the work area. Types of respirators used shall be approved by MSHA/NIOSH for asbestos in accordance with OSHA Standard 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide a level of respiratory protection which supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc), as the minimum level of protection allowed. Determine the proper level of protection by dividing the actual airborne fiber count in the work area by the "protection factors" given below for each respirator type:

<u>Respirator Type</u>	<u>Protection Factor</u>

Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Half-facepiece	10

Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Full-Facepiece	50 (quantitative)

Powered air purifying (PAPR): Positive pressure respirator High efficiency HEPA filter, Full-facepiece	1000

<u>Respirator Type</u>	<u>Protection Factor</u>

Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000

Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000

Type C supplied air: Pressure-demand, Full-facepiece equipped with an auxiliary SCBA	1000

1. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
2. During the use of supplied air systems the Contractor shall provide authorized visitors, Lakeland CSD's Environmental Consultant, and the testing laboratory representative with individually issued and marked respiratory equipment (up to six units). Respiratory equipment shall be compatible with the supplied air system in use, and shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
3. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.
4. Breathing air supply systems shall conform to the USEPA NIOSH Document EPA-560-OPTS-86-001 (September 1986) entitled "A Guide to Respiratory Protection for the Asbestos Abatement Industry."
5. The Contractor shall have a minimum of two spare air hoses with connectors to permit the Lakeland CSD's Environmental Consultant or testing laboratory's representative to connect his/her assigned Type C respirator to the air system at any time without having to wait for personnel to exit the work area in order to obtain a spare hose.

PART 3 - EXECUTION

3.01 DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Personal decontamination system enclosures shall be constructed and functional prior to commencing the regulated abatement work area preparation activities. Waste decontamination system enclosures shall be constructed and functional at the completion of preparation activities. After installation of the personal decontamination system enclosure, all access to the regulated abatement work area shall be via the installed personal decontamination system enclosure.
- B. Personal Decontamination System Enclosure - Large Project.
 - (1) Enclosure – General. A personal decontamination system enclosure shall be provided outside the regulated abatement work area and in close proximity

to all locations where personnel shall enter or exit the regulated abatement work area. One personal decontamination enclosure system for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The personal decontamination system enclosure shall be sized to accommodate the number of workers and equipment required for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, personal decontamination enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance with all federal, state and local government requirements. This system shall remain on-site, operational and be used until completion of Phase II C of the asbestos project.

- (2) Rooms and Configuration. The personal decontamination system enclosure shall consist of a clean room, a shower room and an equipment room connected in series but separated from each other by airlocks. There shall be a curtained doorway separation between the equipment room and the regulated abatement work area, and there shall be a lockable door to the outside. (See Figure 1 within ICR 56) Minimum dimensions for each airlock, shower room and equipment room shall be three (3) feet wide by six (6) feet in height, to allow for adequate access to and from the regulated abatement work area.
- (3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.
- (4) Framing. Enclosures systems accessible to the public shall be fully framed, hard-wall sheathed and utilize a lockable door for safety and security.
- (5) Sheathing. A plywood or oriented strand board (OSB) sheathing material of at least 3/8-inch thickness.

- (6) Plastic Sheetting. Enclosure systems constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for floor protection of this area.
- (7) Prefabricated or Trailer Units. A completely watertight fiberglass or marine painted prefabricated unit does not require plasticizing. Rooms shall be configured as per paragraph (2) of this Section. All prefabricated or trailer decontamination units shall be kept in good condition, and shall be completely decontaminated after final cleaning and immediately prior to clearance air sampling. Upon receiving satisfactory clearance air results, the prefabricated units shall be sealed then separated from the regulated abatement work area and removed from the site.
- (8) Clean Room. The clean room shall be sized to accommodate a full workshift of asbestos abatement contractor personnel, as well as the air sampling technician and the project monitor. The clean room shall be a minimum of six (6) feet in height. A minimum of thirty-two (32) square feet of floor space shall be provided for every six (6) full shift abatement workers, calculated on the basis of the largest work shift. If the largest work shift consists of three (3) or less full shift abatement workers, the minimum clean room size requirement is reduced to twenty-four (24) square feet of floor space. Benches, lockers and hooks shall be provided for street clothes. Shelves for storing respirators shall be provided. Clean clothing, replacement filters for respirators, towels and other necessary items shall be provided. The clean room shall not be used for storage of tools, equipment or materials. It shall not be used for office space. A lockable door shall be provided to permit access to the clean room from outside the regulated abatement work area or enclosure and shall be used to secure the regulated abatement work area and decontamination enclosure during non-work hours.
- (9) Shower Room. The shower room shall contain one (1) shower per every six (6) full shift abatement workers, calculated on the basis of the largest work shift. Multiple showers shall be simultaneously accessible (installed in parallel) to certified personnel. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. Uncontaminated soap, shampoo and towels shall be available at all times. Shower water shall be drained, collected and filtered through a system with at least 5.0-micron particle size collection capability. Submersible pumps shall be installed, maintained and utilized in accordance with pertinent OSHA regulations and manufacturer's recommendations. A multi-stage filtering system containing a series of several filters with progressively smaller pore sizes shall be used

to avoid rapid clogging of the filtering system by larger particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos-contaminated waste.

- (10) Equipment Room. The equipment room shall be used for the storage of decontaminated equipment and tools. A one (1) day supply of replacement filters for HEPA-vacuums and negative pressure ventilation equipment in sealed containers, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement project may also be stored here. A container lined with a labeled, at least six (6) mil plastic bag for collection of clothing shall be located in this room. Contaminated footwear and work clothes shall be stored in this area.
- (11) Airlocks. Airlock construction shall consist of two (2) curtained doorways with three (3) alternating six (6) mil fire retardant polyethylene curtains per doorway, separated by a distance of at least three (3) feet, such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the next doorway. Minimum airlock size shall be three (3) feet wide, by three (3) feet long, by six (6) feet in height.

C. Personal Decontamination System Enclosure - Small Project

- (1) Enclosure Requirements. A personal decontamination system enclosure for a Small asbestos project shall consist of, at a minimum, an equipment room, a shower room and a clean room separated from each other and from the regulated abatement work area and other areas by curtained doorways as defined in ICR 56 Section 56-2.1. All other provisions for personal decontamination system for a Large asbestos project shall apply. Equipment storage, personal gross decontamination and removal of clothing shall occur in the equipment room just prior to entering the shower. (See Figure 4 in the ICR 56) The full personal decontamination system enclosure specified for Large asbestos projects is recommended.

D. Remote Personal Decontamination System Enclosure. If a personal decontamination system cannot be attached to the regulated abatement work area, due to available space restrictions or other building and fire code restrictions, a remote personal decontamination system enclosure may be used for limited Special Projects as per subpart 56-11, negative pressure tent enclosure work areas with glovebag only abatement, or if non-friable ACM is being removed in a manner which will not render the ACM friable.

Limitation. If it is found during removal, that the non-friable ACM or asbestos material will become friable during the removal process, and it is logistically possible to attach the decontamination system enclosure,

abatement work must stop immediately while the remote personal decontamination system is relocated to be attached and contiguous to the regulated abatement work area.

The following requirements apply for all remote personal decontamination systems:

- (1) Protective Clothing. Workers shall don two (2) sets of disposable protective clothing and a supply of protective clothing shall be kept in the airlocks attached to the regulated abatement work area.
- (2) Location. The remote personal decontamination system shall be constructed as close to the regulated abatement work area as physically possible. If the remote personal decontamination system must be located at the exterior of the building/structure due to space or code restrictions, it shall be constructed within fifty (50) feet of the building/structure exit used for access by the asbestos abatement contractor personnel. The decontamination unit shall be cordoned off at a distance of twenty-five (25) feet to separate it from public areas.
- (3) Airlocks. At a minimum, two (2) extra airlocks as defined in ICR 56 Section 56-2.1 shall be constructed as per ICR 56 Section 56-7.5(b)(11). One shall be constructed at the entrance to the equipment room or equipment/washroom. The other extra airlock shall be constructed at the entrance to the containment or regulated abatement work area(s). These airlocks shall have lockable doorways at the entrance to the airlock from uncontaminated areas. These airlocks shall be cordoned off at a distance of twenty-five (25) feet and appropriately signed in accordance with ICR 56 Section 56-7.4(c). Airlocks shall not be used as a waste decontamination area and shall be kept clean and free of asbestos containing material.
- (4) Designated Pathway. The walkway from the regulated abatement work area to the personal decontamination system or next regulated abatement work area shall be cordoned off and signage installed as per ICR 56 Section 56-7.4(c), to delineate it from public areas while in use during Phase IIA through IID.

- (5) Travel Through Uncontaminated Areas. If at any time a worker must travel through an uncontaminated area to access the personal decontamination area, the worker shall HEPA-vacuum and/or wet wipe his/her outer protective clothing while in the regulated abatement work area, then proceed into the airlock, which serves as a changing area, where he/she shall remove the outer clothing and don a clean set of protective clothing. The worker may then proceed to the personal decontamination system enclosure only along a designated pathway as described above. Travel in any other area shall not be allowed.
- (6) Removal. The remote personal decontamination unit shall be removed only after satisfactory clearance air sampling results have been achieved.

E. Waste Decontamination System Enclosure - Large and Small Asbestos Projects.

- (1) Enclosure – General. A waste decontamination system enclosure shall be provided outside the regulated abatement work area and shall be attached to the regulated abatement work area. One (1) waste decontamination enclosure for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The waste decontamination system enclosure shall be sized to accommodate the number of workers and equipment for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance to all federal, state and local government requirements. This system shall remain and be used until completion of Phase II C of the asbestos project.
- (2) Rooms and Configuration. A waste decontamination system enclosure shall consist of a washroom and a holding area connected in series but separated from each other by an airlock. There shall be a lockable door to the outside, and there shall be a curtained doorway between the washroom and the regulated abatement work area. (See Figure 2 in the ICR 56)

- (3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One (1) sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.
- (4) Washroom. A room/chamber between the regulated abatement work area and the holding area in the waste decontamination system enclosure, where equipment and waste containers are wet cleaned or HEPA-vacuumed. Adequate drainage and bag/container wash water shall be provided within the room/chamber, as well as a sufficient quantity of clean waste bags/containers.
- (5) Equipment/Washroom Alternative. Where there is only one (1) exit from the regulated abatement work area, the holding area of the waste decontamination system enclosure may branch off from the equipment room of the personal decontamination system enclosure. The equipment room will also be used as a waste washroom. (See Figure 3 in the ICR 56)
- (6) Plastic Sheeting. Waste decontamination system enclosures constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of these areas.
- (7) Enclosure Security. The waste decontamination system enclosure and regulated abatement work area airlock(s) (when remote decontamination systems are used) shall be constructed with lockable doors to prevent unauthorized entry. Enclosures systems located within twenty-five (25) feet of an area of public access shall be fully framed and hard-wall sheathed for safety.
- (8) Drains. The waste washroom shall be equipped with a wash bin of sufficient size to perform waste

container washing operations and shall have a submersible pump installed to collect waste water and deliver it to the shower wastewater filtration system where it shall be filtered in accordance with paragraph (b)(9) of this Section.

- (9) Shower/Washroom Alternative - Small Asbestos Project. For Small asbestos projects with only one (1) exit from the regulated abatement

work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage, but shall be used for waste transfer to carts, which shall be immediately removed from the enclosure. Waste shall be transferred only during times when the showers are not in use. (See Figure 4 in this Section)

- F. Waste Decontamination System Enclosure – When Remote Personal Is Allowed. When a remote personal decontamination system enclosure is allowed and utilized for a regulated abatement work area, the following requirements shall apply:

- (1) Minor Size Regulated Abatement Work Area. No specific waste decontamination system enclosure is required for minor size regulated abatement work areas. The waste generated shall be immediately bagged/containerized within the regulated abatement work area.
- (2) Small & Large Size Regulated Abatement Work Areas.
 - (i) Washroom. An additional chamber shall be constructed within the regulated abatement work area, attached to the existing airlock used to access the work area. The washroom/airlock combination shall be utilized as the contiguous waste decontamination enclosure for waste bagging/containerization and waste transfer activities. The washroom shall be constructed and supplied with equipment/materials consistent with waste decontamination system enclosure washroom requirements for contiguous personal and waste decontamination system enclosures.
 - (ii) Removal. The washroom chamber shall be removed only after satisfactory clearance air sampling results have been achieved

3.02 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES:

- A. General: The Contractor shall take all safety measures and precautions necessary to protect his/her employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state and city regulations. The Contractor shall be solely responsible for enforcing personnel protection requirements.
1. After the installation of the personal decontamination system, full PPE in compliance with current OSHA regulations shall be worn in regulated abatement work areas during preparation activities, for all friable OSHA Class I or Class II asbestos projects. Asbestos abatement contractor's respirator selection, filter selection, medical surveillance and respiratory training must be consistent with current OSHA regulations. Appropriate respiratory protection is also required of all authorized visitors.
 2. Workers or authorized visitors shall not eat, smoke, drink, or chew gum or other substances while in the work area(s) or decontamination area(s).
 3. Contaminated worker footwear, eye protection, and hard hats shall be stored in the equipment room when not in use in the work area and, upon completion of asbestos abatement, disposed of as asbestos-contaminated waste or decontaminated for reuse.
 4. Entry to the personal and waste decontamination system enclosures shall be restricted to the asbestos contractors involved with the asbestos project, appropriately certified employees of the asbestos contractors, authorized visitors, police, fire and other public safety personnel.
 5. Asbestos workers shall not wear any jewelry; e.g. watch, necklace, etc. while in the work area or decontamination area.
- B. Worker Respiratory Protection: With approval from the Lakeland CSD's Environmental Consultant, historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for the time interval prior to the Contractor establishing the eight-hour time weighted average (TWA) for an abatement task. Historical data provided by the Contractor shall be based on OSHA personal air monitoring of the "breathing zone" of his/her employees for other asbestos abatement projects, and the data were obtained during work operations conducted under work place conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations. Documentation of aforementioned results shall be presented to the Lakeland CSD's Environmental Consultant for review of applicability. (See "Submittal, Pre-Project

Information." This will not relieve the Contractor in providing personal air monitoring to determine the TWA for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101. After the TWA is established, the Contractor may provide respirators as presented in the Specification. The minimum level of protection for TSI and/or Surfacing Materials abatements is full face-piece Powered Air Purifying Respirator (PAPR).

1. Review safety data sheets (SDS) for products to be used during the work. Follow recommendations as given by the product manufacturer for personnel protection required to be worn during product application.
2. Personal Air Monitoring Requirements: The Contractor's CIH shall be responsible for development and implementation of a personal air monitoring program in accordance with OSHA Standard 29 CFR 1926.1101, good industrial hygiene practices, and the requirements herein. Personal air monitoring shall be performed by an independent testing laboratory and supervised by the Contractor's CIH. Documentation of air sampling shall include as a minimum, calculations of minimum sample volume to achieve necessary detection limits; sampling time; sampling location (or subject); evidence of periodic inspection of sampling equipment; documentation of daily pre- and post-calibration of sampling equipment; detailed description of worker protective devices; description of any typical environmental conditions; and a description of work practices/procedures/controls in operation during the sampling period. Documentation of sample analysis shall include, as a minimum, sample identification; total sample duration, sample flow rate; the "Limit of Reliable Quantification"; total air volume; total fibers counted (with work sheets); total fields counted; blank filter analysis; and reticule field area. Airborne fiber concentrations in fibers per cubic centimeter (f/cc) shall be calculated and reported at the 95 percent confidence level.
3. Full-shift personal exposure air sampling of workers shall be performed to establish the 8-hour (TWA) exposure. Such sampling shall be conducted for each employee (or representative group of employees, at least one sample per eight man crew) expected to evidence the highest exposure in each work area for each type of activity on the first shift that site preparation, removal, or cleanup activities occur. Similarly, 30-minute personal exposure air sampling shall be conducted during activities anticipated to produce the highest airborne concentrations to determine the Excursion Limit. Personal exposure sampling shall be repeated everyday as per protocol requirements where removal and cleanup operations are conducted for the duration of the project, or at any time that conditions indicate to the Contractor or the Contractor's CIH that the most recent personal sampling results are no longer indicative of employee exposure. PCM personal samples shall be collected and analyzed according to the

OSHA Reference Method in OSHA Standard 29 CFR 1926.1101, Appendix B.

C. Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing NYSDOL ICR 56-11.7 for Non Friable Flooring and/or Mastic Removal:

The following entry/exit procedures shall be used for gross removal:

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.
2. All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity.
3. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.
4. Each worker or authorized visitor shall, each time he/she leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.
5. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

3.03 PREPARATION OF WORK AREA:

The following Paragraph "General Preparations" outlines procedures applicable to all work areas. Work procedures specific for preparing each asbestos removal area is addressed in its respective Subparagraph. If a site specific variance is approved, procedures outlined in the variance will supercede this specification.

A. General Preparations: The following general preparations shall be used for all work areas being abated:

1. Erect barricades; post notices and warning signs.
 2. Provide and install decontamination enclosure systems in accordance with Article 3.01, "Decontamination Enclosure Systems" of this Section.
 3. Seal drains and other collection devices with 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
 4. Ensure that the Contractor's approved Fall Protection Equipment (if applicable) is in place, in operating condition, and in operation during work described in this section.
 5. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
 6. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels.
 7. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be equipped by manufacture with HEPA filtered local exhaust ventilation.
 8. Hot and cold water may not be available in all work areas. In such cases sufficient heating equipment shall be provided to maintain a necessary supply of hot water for showers.
- B. Friable Asbestos-Containing Pipe/fittings Insulation Tent Work Areas:
1. A decontamination system that complies with Subpart 56-7.5 shall be installed or constructed before any preparatory work in the work area and before any disturbance of asbestos material. The decontamination enclosure system shall be located as close to the work area as possible. The decontamination unit may be mobile.
 2. An airlock and attached washroom constructed of one (1) layer of 6 mil. polyethylene sheeting shall be attached to the work area if a remote decontamination unit is utilized.
 3. The work area, decontamination units, airlocks and dumpster shall be

cordoned off with asbestos warning tape and signs at a distance of ten (10') feet where feasible and shall remain vacated except for certified workers until satisfactory clearance air monitoring results have been achieved.

4. All access areas between the work area and the decontamination enclosure system shall be restricted or cordoned off with caution tape and signage to prevent access of non-certified personnel into the work area.
5. All electric power in the work area shall be shut down and locked out. In the event this is not possible as per 56-7.7 (c), the live electric shall be maintained within those conduits, cables, panels and boxes as per following conditions:
 - a) All live cables, electrical panels and boxes that run through the work areas shall be wrapped with three (3) layers of 6-mil plastic sheeting. Each layer shall be individually taped and sealed separately. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air monitoring results have been obtained.
 - b) Any energized circuits remaining in the work areas shall be posted with a two (2) inch high lettering warning sign which reads: DANGER-LIVE ELECTRICAL-KEEP CLEAR. The sign shall be placed on all live covered barriers at maximum of (10) ten-foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work areas of the existence of the energized circuits.
 - c) All electrical power for the removal project shall be brought into the work area through a separate GFI panel box located outside the work area.
6. Critical/isolation barriers shall be constructed in the Work Area using minimum of two layers of 6-mil polyethylene sheeting and plywood (where required). Alternatively, the contractor has the option to perform the work utilizing a Tent Enclosure. If a Tent enclosure is utilized, it shall be constructed in accordance with IRC 56 Subpart 7.11 (f) (1) (only for drain bowl work areas). The Work Area shall be exhausted utilizing negative air units to achieve six (6) air changes per hour for critical/isolation barrier work areas or four (4) air changes per hour for Tent Enclosure work areas. Sufficient negative air handling equipment shall be utilized on site in order to achieve required negative air pressure within the work area (See Appendix A).
6. A four (4) hour pre-abatement settling period is required prior to commencement of ACM removal activities.

3.04 PRE-REMOVAL INSPECTIONS:

- A. Prior to removal of any ACM the Contractor shall notify the Lakeland CSD's Environmental Consultant and request a pre-removal inspection. Posting of warning signs, plasticizing of work area, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of Lakeland CSD's Environmental Consultant. The Contractor shall not begin asbestos removal until the Lakeland CSD's Environmental Consultant approves the work area preparations.

3.05 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Repair damaged barriers and remedy any defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.
- B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of twice each 8- hour work shift.
- C. Ensure that both hot and cold water exist in sufficient supply for the decontamination enclosure system.

3.06 REMOVAL OF ASBESTOS-CONTAINING MATERIAL:

The Asbestos Contractor shall be responsible for the proper removal of ACM from the Work Area using standard abatement industry removal techniques. The Environmental Consultant or their representative shall observe the Work. Approval of the Asbestos Contractor's abatement techniques is required by the Environmental Consultant to allow for the continuance of work.

- A. Removal of Friable Asbestos-Containing Pipe Insulation/Fittings in Tent Enclosures:
 - 1. Materials removed shall be containerized or immediately wrapped in two (2) layers of six (6) mil fire retardant plastic sheeting and secured air tight prior to transport to the waste decontamination facility. Residual non-friable ACM shall be wet scraped by manual means and HEPA vacuumed and

likewise containerized and secured air tight prior to transport to the waste decontamination facility.

2. Asbestos containing materials will not be allowed to accumulate in the work area

B. Additional Removal Requirements:

1. Lakeland CSD's Environmental Consultant shall issue a stop work order if visible emissions are detected outside the work areas and/or should the fiber count in adjacent non-work areas exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s) causing the increase are corrected, surfaces outside of the work area are decontaminated using HEPA vacuums or wet cleaning techniques and the Contractor receives written notice from Lakeland CSD's Environmental Consultant.

3.07 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES:

- A. Packaging of ACM shall conform to OSHA Standard 29 CFR 1926.1101, DOT 49 CFR 171,172, and 173, EPA Standard 40 CFR Part 61, New York City Department of Sanitation (in relation to transport, storage, and disposal of ACM) and the requirement as heretofore specified. ACM waste shall be placed in a wet condition into properly labeled disposal bags or sealed in two layers of 6-mil plastic sheeting wrapped airtight and properly labeled. Materials to be transported through a non-Work Area building space shall be placed in hard wall shipping containers for handling. Specific requirements for decontamination of waste containers, and load out through the decontamination enclosure systems is outlined below:
- B. Frequency of Waste Removal: Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site. The waste hauler and landfill shall be as indicated on the notifications to regulatory agencies.
- C. Waste Load-out Through Waste Decontamination Unit: Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in a designated part of the Work Area. Move wrapped asbestos waste to the washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.
- D. The clean containerized items shall be moved directly to the Waste Hauler's truck pending load-out to storage or disposal facilities.

- E. Workers who have entered the decontamination enclosure system from the uncontaminated non-work area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.
- F. Thoroughly clean the decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.
- G. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, whether turned inside out or not, shall be handled and disposed of as ACM waste.

3.08 CLEANUP AND CLEARANCE TESTING OF WORK AREAS:

The following cleanup procedures shall be performed during abatement.

- A. Non-Friable Materials
 - 1. Visible accumulations of loose asbestos containing waste material shall be cleaned up using rubber or plastic dustpans and rubber squeegees or HEPA filtered vacuums. Metal shovels may also be used, except in the vicinity of plastic sheeting, critical barriers and isolation barriers, which could be perforated by these tools. To pick up excess water and gross wet debris, a wet-dry HEPA filtered shop vacuum dedicated to asbestos abatement may be used. This cleaning shall be done whenever there is sufficient asbestos waste material to fill a single leak-tight bag/container, or this cleaning shall be done at the end of each work shift whichever shall occur first. Visible debris shall be maintained adequately wet.
 - 2. Work shall stop whenever excessive water accumulation or flooding is present in the area and shall not resume until the water is collected and disposed of properly.
 - 3. Final clean-up and clearance procedures for abatement shall comply with ICR 56 Section 56-9 is to be performed.
 - 4. Three (3) (12) hour post-abatement settling/drying periods are required prior to commencement of final air sampling activities for manual wet removals for full containments.

5. Air sampling and analysis on asbestos projects conducted under this Section is required. Air sampling and analysis shall then be conducted in accordance with the requirements of ICR 56 Subpart 56-4.

a. A minimum of five TEM air samples will be collected inside and five outside the work area to determine final air clearance re-occupancy. All TEM results must satisfy the clearance criteria for re-occupancy.

b. When the work area passes the re-occupancy test, all controls and seals established shall be removed.

3.09 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE:

- A. Storage of Containerized ACM: As the work progresses, remove sealed and labeled bags of ACM from the Work Area and place in a lockable trailer, dumpster, or other container approved for storage or transport of asbestos waste. The waste container shall be lined with two layers of 6-mil fire retardant plastic on all sides. Asbestos-containing waste shall remain under the positive control of the Asbestos Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access. Containerized ACM shall be removed from the site on a daily basis. Unless specifically approved in writing by the Owner, ACM shall not be permitted to be stored on site during non-working hours.
- B. Sealed and labeled bags or waste wrapped in two layers of plastic sheeting sealed airtight shall be used to transport asbestos-contaminated waste to the landfill. Procedures for hauling and disposal shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations. Procedures for removal from the Work Area and disposal of waste are outlined below:
- C. A properly completed and original "Waste Shipment Record" form shall accompany asbestos waste, which is transported to a disposal site. This form shall be signed and dated by each party who has control over the asbestos waste, and a copy retained by each party as responsibility for the waste is transferred to the next party. All original manifest forms and waste receipts shall be provided to the Architect. The Environmental Consultant shall be provided with copies of all waste manifests.
- D. Trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste container en-route to approved landfill. The interior of the vehicles shall be lined with two layers of 6-mil plastic.
- E. Mark with a visible warning sign during the loading and unloading of asbestos-containing waste all vehicles used to transport the waste material. Danger sign legend, text size, style and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d) (I).

- F. Only sealed plastic bags or completely sealed items shall be deposited in landfill. Damaged, broken sealed windows or leaking plastic bags shall be resealed prior to being deposited in the landfill. Workers shall place asbestos waste in the landfill. Throwing or dumping of containers shall not be allowed. Workers unloading and handling the sealed bags/drums at the disposal site shall wear appropriate personnel protective equipment including respirators and protective clothing.
- G. After the vehicle is unloaded at the landfill, the plastic sheeting that was taped to the floor, sides and top of the truck shall be carefully removed and placed in properly labeled bags for disposal with the rest of the waste.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL APPROVED	DATE SUBMITTED	DATE
Pre-Project Submittal:		
1. Insurance	_____	_____
2. All required bonds	_____	_____
3. List of Subcontractors	_____	_____
4. Health and Safety Plan	_____	_____
5. Proof that all required permits and variances have been obtained	_____	_____
6. Documentation of Required Qualifications of Workers	_____	_____
7. Proof of a respiratory protection program.	_____	_____
8. Proof of historic airborne fiber data.	_____	_____
9. Proof that a landfill site has been located.	_____	_____
10. SDS of chemicals to be used on this project.	_____	_____
11. Asbestos Removal and Disposal Work Plan	_____	_____
During Work Submittal:		
1. Schedule of Work Changes	_____	_____
2. Notarized copy of weekly payroll showing a prevailing wage rate has been paid.	_____	_____
A "Request For Services" form.	_____	_____
3. Results of all air monitoring performed by the Contractor (OSHA)	_____	_____

HAZMAT ABATEMENT WORK PLAN

SECTION 020810

ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. The asbestos abatement contractor shall perform the following work as described below and indicated on the drawings. The drawings are only a diagrammatic representation of the Work Areas and do not constitute the actual quantities of material. The asbestos abatement contractor is responsible for the confirmation of the actual total quantities of the Work. The asbestos abatement contractor shall provide all labor, equipment and materials necessary to complete the Work in accordance with the Contract Documents. All asbestos material is to be disposed of as ACM waste. Quantities indicted below are confirmed asbestos. Please note that several work areas and all quantities will depend on the actual scope of work and how much ceiling area is disturbed that will affected piping.
- B. This work plan has been developed to comply with the regulations under Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56), Occupational Safety and Health Administration (OSHA) 29 CFR 1910.120(b)(4), Hazardous Waste Operations and as per contract documents and specifications.

Copper Beech Middle School
3401 Old Yorktown Road, Shrub Oak, New York 10588

1. Drawing H-002.00: First Floor Area F Plan

- a. Remove and dispose of asbestos-containing Sink Undercoating, Drain Bowl Insulation, Floor tiles/mastic & Pipe/Fittings within Work Area 1. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-.11 tent procedures & 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Family and Consumer Science Rooms 338,339,339A, 339B	9"x9" Floor Tile & Mastic	+/- 2325 square feet	NYSDOL 12 NYCRR Part 56-11.7
		Sink Undercoating	+/- 66 square feet (8 sinks)	

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
1	Family and Consumer Science Rooms 338,339,339A, 339B	Associated Pipe Fittings	+/- 50 Linear Feet	NYSDOL 12 NYCRR Part 56-7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT
		Drain Bowl Insulation (White) Above Ceiling Tiles	+/- 10 Square Feet	

2. Drawing H-003.00: 1st Floor Area E Plan

- a.** Remove and dispose of asbestos-containing Pipe/fittings, floor tile and lab counter tops within Work Area 2. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-.11 tent procedures & 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
2	6th Grade Science Classrooms 100, 103,7th Grade Science Rooms 201 (Prep Rm), 205 & 207	9"x9" Floor Tile & Mastic	+/- 4100 Square Feet	NYSDOL 12 NYCRR Part 56-11.7- Non-Friable Flooring and mastics
		Lab Counter Tops	+/- 495 Square Feet	
		Associated Pipe Fittings	+/- 80 Linear Feet	NYSDOL 12 NYCRR Part 56-7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT

3. Drawing H-004.00: First Floor Area D Plan

- a. Remove and dispose of asbestos-containing floor tile/mastic, pipe fittings and sink undercoating within Work Areas 3,3A,4 & 5. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-.11 tent procedures & 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
3	Library Rooms 304C,304D & 304E	9"x9" Floor Tile & Mastic	+/- 590 Square Feet	NYS DOL 12 NYCRR Part 56- 11.7- Non-Friable Flooring and mastics
		Sink Undercoating	+/- 8 Square Feet	
		Associated Pipe Fittings	+/- 20 Linear Feet	NYS DOL 12 NYCRR Part 56- 7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT
3A	Library Rooms 304A,304B,304E, Main Library Area	Associated Pipe Fittings	+/- 45 Linear Feet	NYS DOL 12 NYCRR Part 56- 11.7- Non-Friable Flooring and mastics
4	SEED Office/Room 306B	9"x9" Floor Tile & Mastic	+/- 110 Square Feet	NYS DOL 12 NYCRR Part 56- 11.7- Non-Friable Flooring and mastics
		Associated Pipe Fittings	+/- 5 Linear Feet	NYS DOL 12 NYCRR Part 56- 7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT
5	A/V room 306 306A (Above Ceiling Only)	9"x9" Floor Tile & Mastic	+/- 520 Square Feet	NYS DOL 12 NYCRR Part 56- 11.7- Non-Friable Flooring and mastics

5	A/V room 306 306A (Above Ceiling Only)	Associated Pipe Fittings	+/- 20 Linear Feet	NYSDOL 12 NYCRR Part 56- 7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT

4. Drawing H-005.00: First Floor Area B Plan

- a. Remove and dispose of asbestos-containing floor tile/mastic, pipe fittings and sink undercoating within Work Area 6. All materials shall be removed utilizing NYS DOL 12 NYCRR Part 56-.11 tent procedures & 56-11.7 non-friable procedures.

Work Area #	Location	Asbestos-Containing Material	Approximate Quantity	Removal Procedure
6	6 th Grade Science Classroom 113	9"x9" Floor Tile & Mastic	+/- 4100 Square Feet	NYSDOL 12 NYCRR Part 56-11.7- Non- Friable Flooring and mastics
		12"x12" Cream Floor Tile and Mastic	+/- 100 Square Feet	
		Lab Counter Tops	+/- 95 Square Feet	
		Associated Pipe Fittings	+/- 20 Linear Feet	NYSDOL 12 NYCRR Part 56-7.11 (f)(1)(i) REGULATED NEGATIVE PRESSURE TENT

- B. The Contractor is responsible for completing all notifications and variances required to meet the determined start date (if applicable).
- C. If asbestos containments are required, the Contractor shall establish the asbestos containments so as to not interfere with operation of or access to the temporary equipment that shall be installed by others.
- D. The Contractor shall field verify the amount of ACM and familiarize him/her-self with all variable field conditions in the building before the submission of his/her quote. The quantities presented in this specification are approximate only and should not be used solely as the basis for any quote. Any discrepancies or difference in the approximate and actual quantities shall be resolved before the award of any Contract. No change order relative to ACM material quantity will be permitted after the award of the Contract, unless new areas are added. In the event that suspect materials not included in this Specification are encountered while the work is in progress, such material shall be tested and, if confirmed ACM, removed as ACM, in accordance with the procedures contained herein. The discovery of any new material(s) should not delay the progress of the work as contained in this specification. Payment for any additional work will be considered on a case-by-case basis by the Environmental Consultant and Lakeland CSD. It is the responsibility of the Contractor to determine negotiate the full cost of any such payment prior to performance of any additional work.
- F. ACM shall be properly handled, packaged, and transported for disposal in a landfill in accordance with all Federal, State and Local regulations. After September 4, 2006, the Contractor shall follow Part 56 of Title 12 of the Official Compilation of Codes, Rules and Regulations of the State of New York (Cited as 12 NYCRR Part 56) as amended effective March 21, 2007. All related manifests and shipping logs shall be provided to Lakeland CSD upon or before the end of the project.
- G. All work shall be accomplished in strict adherence to the project Specification, applicable Federal, State, and Local Regulations. Whenever there is a conflict or overlap of the above references, the more stringent provision shall apply.
- H. The Contractor's industrial hygiene practices during asbestos abatement will be monitored by Lakeland CSD's Environmental Consultant. The Contractor shall be responsible for monitoring his/her own construction safety work practices for compliance with the OSHA regulations.
- I. The Asbestos Contractor shall provide the best available technology, and state-of-the-art procedures and methods of execution, clean-up, disposal, and safety.
- J. The Contractor will be required, if approved by Lakeland CSD and/or its Representative, to obtain at his/her own expense appropriate variances from regulatory agencies as required to complete the safe removal of asbestos containing material as described in this specification.
- K. Lakeland CSD's environmental consultant will sample all suspect materials that

may be identified during the course of demolition, if applicable. The Contractor shall provide access to the consultant to perform the testing and no additional costs will be paid for the time it takes to perform the testing. The contractor shall provide itemized cost proposal to Lakeland CSD which must include separate costs for the abatement of the individual materials revealed to be ACM (if applicable). Additional asbestos-containing materials shall not be abated without written authorization from Lakeland CSD or environmental consultant. The contractor will not be compensated for any additional materials that can be encountered during the abatement project, without prior written authorization from Lakeland CSD or environmental consultant.

1.02 PHASING OF WORK:

This work shall include asbestos abatement associated with upcoming additions and alteration projects at Copper Beech Middle School. The Asbestos Contractor shall perform and complete the abatement of asbestos-containing materials during regular working hours, Monday through Friday between 8:00 am and 4:00 pm or as directed by the facility. It is the Contractor's responsibility to ensure that acceptable visual inspection and air monitoring results are obtained with fiber count of <70 Structures/mm² of air using AHERA analysis method and are completed prior to the return of building occupants or other trades. All work shall be coordinated with Lakeland CSD and Lakeland CSD's Environmental Consultant prior to start of any work. The Lakeland CSD's Environmental Consultant shall be present whenever any asbestos abatement work is being conducted.

1.03 AUTHORITY TO STOP WORK:

Lakeland CSD and the Environmental Consultant shall have the authority to stop the abatement work at any time the contractor's work is not in conformance with the Specifications and applicable regulations. The stoppage of work shall continue until conditions have been corrected to the satisfaction of Lakeland CSD and the Environmental Consultant. Standby time to resolve the problems shall be at the contractor's expense.

1.04 SITE REQUIREMENTS:

- A. Noise Control: Provide mufflers or other acceptable means of noise reduction for all equipment to be used by the Contractor. Observe local laws regarding noise control.
- B. Wastewater: All water used by the Contractor during asbestos abatement activities shall be collected and passed through a water filtration system capable of filtering particles down to 5 microns prior to being discharged into the sanitary sewer. The Contractor shall contact the Westchester County engineering department to determine the acceptable location(s) to access the sanitary sewer. The Contractor shall be responsible for connection to the sanitary sewer, and for providing piping, pumps, water filtration systems, and other items necessary to collect, transport, filter, and dispose of the wastewater.

- C. Log In/Out: The Asbestos Contractor must ensure all workers log in and out daily at the site.
- D. The location of the Decontamination Unit shall be a location agreed upon between The Asbestos Contractor, Lakeland CSD and Lakeland CSD's environmental consultant. All variations must be coordinated and approved by the site manager and Lakeland CSD's Environmental Consultant.

1.05 HEALTH AND SAFETY:

- A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the air supplied to respirators, or from toxic or damaging vapors or residues resulting from the use of encapsulant and/or wetting agents or other substances used by the Contractor during construction.
- B. Chemical/Biological Hazards: The known chemical/biological hazards on site include asbestos-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.
- C. Physical Hazards: The Contractor shall provide safety equipment and training to his/her workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with energized (hot) active equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.
- D. Safety Act: The Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, material-men, and subcontractors, and visitors to the project site.
- E. Accident Prevention: In order to protect the lives and health of his/her employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Lakeland CSD and/or its Representatives, and a copy of the Contractor's report to his/her insurer of an accident must be provided to the Lakeland CSD and/or its Representatives.
- F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his/her work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.

- G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.
- H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special instruction or authorization from the Lakeland CSD and/or its Representatives, is hereby permitted to act at his/her discretion.
- I. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages must add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.06 WORK SUPERVISION AND COORDINATION:

- A. Abatement Contractor's Supervisor: From the start of work through to the project completion the Contractor shall have on-site a responsible and competent supervisor who posses valid NYSDOL Supervisor certifications. As a minimum, the Asbestos Contractor's Supervisor shall meet the qualifications as required by Article 1.12, for a job supervisor. The Supervisor shall be on site during all working hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.
- B. Quality of Work: The Supervisor shall supervise, inspect and direct the Work competently and efficiently, devoting such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Supervisor shall be responsible to see that Work complies accurately with the Contract Documents, and that all Work installed is of good quality and workmanship.

1.07 SUBMITTALS:

Unless otherwise noted the Contractor shall submit three (3) copies of each APPLICABLE submittal to the Lakeland CSD's Environmental Consultant and its Representatives for review and/or approval. The Contractor shall provide the following:

- A. Pre-Project Submittal:
 - 1. Certificates of Insurance naming Lakeland CSD as additional insured.
 - 2. All required bonds. All bonds shall be underwritten by a United States based, preferably New York State, A or B rated bonding company.
 - 3. List of Subcontractors.

4. Health and Safety Plan: Provide a written Health and Safety Plan addressing procedures for work place safety. As a minimum, the following topics shall be addressed in the plan:
 - a. Hazard Communication. Procedure on how physical and health hazards associated with the work are identified and communicated to employees, and name of the person responsible for implementation of the Hazard Communication Program.
 - b. Guidelines for assessment and prevention of heat stress.
 - c. Procedures for using ladders safely.
 - d. Electrical safety procedures.
 - e. Emergency Action Plan: The Contractor shall submit for review a written Emergency Action Plan. This Plan shall outline the contingency actions to be performed for emergencies including fire, accident, power failure, supplied air system failure, breach of work area containment, unexpected asbestos contamination in the site area and on the adjoining grounds, or spilling of asbestos material being hauled to storage and/or disposal. This Plan shall identify the manner in which emergencies are announced, emergency escape procedures and routes, and procedures to account for all employees after evacuation. The Plan shall identify those persons responsible for fire/life safety duties including the Site Safety Coordinator, persons responsible for fire prevention equipment and the control of fuel source hazards, and the members of the Emergency Response Team (see Paragraph "Emergency Response" of this Section). This Plan shall be readily available for review by all workers.
 - f. Fall Protection Plan: The Contractor shall submit for review a written Fall Protection Plan. This plan shall outline the actions to be performed to protect personnel when they are working at elevation. The plan shall detail specific fall protection devices to be utilized, training provided to personnel for same and training of designated competent person in charge of and responsible for the elevated work site.
5. Proof of written notifications required by Paragraph "Codes, Permits and Standards" of this Section. Proof that all required permits and variances have been obtained. NYSDOL and EPA project notifications paid in full.
6. Proof of written notification to the local police department, fire department and Facility (include a copy of required by NYS DOL ICR 56 section 563.6a ten day notice) that asbestos abatement work is being conducted. As a minimum, the notification letter shall include the address of the Facility, dates work is to be performed, and drawings indicating the areas to undergo abatement.

7. Documentation of compliance with all requirements of paragraph "Requirements and Qualifications" of this Section. Submittal shall include:

- a. Proof that the job supervisors, foremen, and asbestos abatement workers meet State certification and license requirements.
- b. Proof of a current medical surveillance program for all Contractor's personnel to work on this project.
- c. Completed and notarized Certificate of Worker's Release for each asbestos abatement worker, workers of other trades, or supervisory personnel who enter the work area or otherwise contact ACM.

8. Proof of a respiratory protection program. Submit level of respiratory protection intended for each operation required by the project.

9. Proof of historic airborne fiber data. Submit airborne asbestos fiber monitoring data from an independent air monitoring firm to substantiate selection of respiratory protection proposed. Data shall include the following for each procedure required by the work: 1. date of measurement; 2. type of work task monitored; 3. methods used for sample collection and analysis, and; 4. number, duration and results of samples taken.

9. Proof that a landfill site has been located, and arrangements for transport and disposal of asbestos-containing or asbestos-contaminated materials have been made. Provide the name and location of the landfill, and waste transport company, if applicable.

10. Manufacturer's literature on all proposed job related equipment and products to be used on this project. Include Safety Data Sheets (SDS) for encapsulant, fire retardant plastics, mastic remover and other chemicals to be used on this project.

11. A detailed Asbestos Removal and Disposal Work Plan which describes all aspects of the work to be performed for this project. The Plan shall include the following:

- a. A detailed description of the work area enclosure. Provide shop drawings (with dimensions and locations) of proposed decontamination facilities and work areas. These drawings shall indicate the following: 1) areas to be sealed off and work area boundaries; and 2) proposed layout and location of the decontamination enclosure systems. Include a detailed description of any modifications or changes to be made to the specified negative pressure work area enclosure.
- b. Specimen of the daily log proposed for use. Minimally, the log should include the date(s) and time(s) when all personnel enter and leave the work area(s).

B. During Work Submittal:

1. Schedule of Work Changes: Any changes in the Schedule of Work proposed by the Contractor shall be submitted for approval to Lakeland CSD no later than seven days prior to the commencement date of the proposed change. A revised Schedule shall be submitted at the end of each week.
2. Notarized copy of payroll showing that prevailing wage rates have been paid shall be submitted to the Lakeland CSD on a weekly basis. Contractor shall use DOL form for wage payment.
3. A "Request For Services" form shall be submitted at least 24 hours in advance of required air monitoring tests and inspections to be performed by the Lakeland CSD's Environmental Consultant.
4. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers to see. A copy of the results shall be given to the Lakeland CSD's Environmental Consultant at the same time.
5. A certified, signed, and completed copy of each "Waste Shipment Record" form used, and receipts from the landfill operator which acknowledge the Contractor's delivery(s) of material, shall be submitted to the Consultant and Engineer within thirty days following removal of ACM from building.
6. A copy of the bound log book.

C. Post Project Submittal:

1. A notarized "Release of Liens" in a form acceptable to the Chappaqua CSD. Use the standard AIA form. Such notarized release of all liens shall certify that all subcontractors, labor suppliers, etc., have been paid their pro rate share of all payments to date, that the contractor has no basis for further claim, and will not make further claim for payment in any account after the first payment is made to him.
2. Proof of payment of prevailing wage rate to direct employees and subcontractor.
3. Notarized copies of a daily log showing the date(s) and time(s) of entrance to and exit from the work area(s) for all persons.
4. Compilation in chronological order of all air monitoring records pertaining to this project.
5. Compilation of all completed and signed Waste Shipment Record forms, bills of lading, or disposal receipts pertaining to this project.

6. Copies of notifications and checks to applicable agencies (see Subparagraph "Pre-Project Submittal Information" of this Section) that the asbestos abatement project has been completed.
7. Contractor shall submit the following items as part of his final submittals:
Paid invoice verifications for sub-contractor (for Time and Material job), service contract agreement, insurance certificates, copies of the workers licenses (NYSDOL), and other submittal required for the Specification.

1.08 FIRE PROTECTION AND EMERGENCY EGRESS:

The Contractor shall be responsible to the security and safeguarding of all areas turned over by the facility to the Contractor. The Contractor shall designate to his/her workers and other building occupants a means of egress in case of emergency.

- A. The Contractor shall establish emergency and fire exits from the work area. First aid kit, 2 full sets of protective clothing and respirators shall be provided for use by qualified emergency personnel in the clean room of the decontamination facility.
- B. For full containment only, the Contractor shall provide a secure work area to protect against unauthorized entry into and around the work area. Any hazardous conditions shall be reported to the contractor's Supervisor and the contractor shall correct the hazard immediately. Any intrusion or incident shall be documented in a bound log book which shall be maintained at the project site.

1.09 CLEAN-UP:

- A. Asbestos Related Clean-up: All clean-up work related to asbestos abatement work shall be in strict accordance with general technical requirements and this specification.
- B. Final Site Cleaning: Upon completion of the work, the Contractor shall remove all temporary construction, decontamination facilities, and unused materials placed on site by the Contractor; put the premises in a neat and clean condition; and provide all sweeping, cleaning, and washing required to restore the site to its original condition.

1.10 CODES, PERMITS, AND STANDARDS:

- A. The Contractor shall be solely responsible for compliance with all applicable federal, state (12 NYCRR Part 56 Adopted March 21, 2007), and local laws, ordinances, codes, rules, and regulations which govern asbestos abatement work or hauling and disposal of asbestos waste material. The current issue of each document shall govern. All work shall comply with all applicable codes and regulations as amended.
- B. Before starting the work, the Contractor shall examine the Technical Specification for compliance with codes and regulations applicable to the work and shall immediately report any discrepancy to the Lakeland CSD's Environmental Consultant.
- C. Where conflict among requirements or with these Specifications exists, the more stringent requirements shall apply.

- D. Permits, State Licenses, and Notifications: The Contractor shall be responsible for obtaining necessary permits, variances, state licenses, and certifications of personnel in conjunction with asbestos removal, hauling, and disposition and shall provide timely notification of such actions as may be required by federal, state, regional, and local authorities. Fees and/or charges for these licenses, permits, and notifications shall be paid by the Contractor. Contractor shall use all notification forms where applicable.
1. Agency Notification: At least 10 days prior to commencement of any asbestos removal, the Contractor shall prepare written notification to EPA Region 2, to the New York State Department of Labor (NYSDOL), and all other applicable agencies having jurisdiction. In addition, the Contractor shall be required to obtain any other permits for work covered under this specification including permits required for air sampling.

1.11 TERMINOLOGY:

The following commonly-used terms are defined in the context of these Specifications:

- A. Asbestos Project: Work that involves the removal, encapsulation, enclosure, repair or disturbance of friable or non-friable asbestos, or any handling of asbestos material that may result in the release of asbestos fibers. For the purpose of compliance with this Part, an asbestos project shall include any disturbance of asbestos fibers, and the planning, asbestos survey (as per Subpart 56-5.1), design, background air sampling, inspection, air sampling and oversight of abatement work, cleanup, and the handling of all asbestos material subject to abatement, as well as the supervising of such activities. Installation of friable ACM shall also be considered an asbestos project. An asbestos project starts with Phase I when the planning, asbestos survey, and design work begins or is required to begin. The project shall not be considered completed until Phase II D is complete.
- B. Asbestos-Containing Material (ACM): Any material or product which contains more than 1 percent asbestos.
- C. Aggressive Air Sampling: Air monitoring samples collected while a leaf blower, fans, or other such devices are used to generate air turbulence within the work area.
- D. Air Filtration Device (AFD) - A portable local exhaust system equipped with HEPA filtration, capable of maintaining a constant low velocity air flow into contaminated areas from adjacent, uncontaminated areas and capable of maintaining a negative air pressure with respect to the adjacent, uncontaminated areas.

- E. Air Lock: A system for permitting ingress or egress to the work area while permitting minimal air movement between a contaminated area and an uncontaminated area, typically consisting of two curtained doorways placed a minimum of three feet apart.
- F. Air Monitoring: The process of measuring the fiber content of a specific volume of air in a stated period of time. Personal air sampling results shall be calculated to reflect the employee's eight-hour time weighted average (TWA) exposure. Area sampling results are reported directly, without calculating the TWA.
- G. Amended Water: Water to which a surfactant has been added.
- H. Asbestos Removal Encapsulant: A chemical solution used in place of amended water during asbestos removal to penetrate, bind, and encapsulate the asbestos-containing material.
- I. Authorized Visitor: Lakeland CSD's Environmental Consultant or representatives of any regulatory or other agency having jurisdiction over the project.
- J. Lakeland CSD's Environmental Consultant: Lakeland CSD's agent who is authorized to exercise general contract administration and industrial hygiene inspection of the work.
- K. Certified Industrial Hygienist (CIH): One certified in the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene.
- L. Class II asbestos work: Activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastic. Class I asbestos work includes the removal of thermal system or surfacing materials.
- M. Competent Person: Definition and responsibilities as set down in 29 CFR 1926.1101(b) and as outlined herein.
- N. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.
- O. Decontamination Enclosure System: A series of connected rooms for the decontamination of workers (a Personnel Decontamination Enclosure System) or of materials and equipment (Equipment Decontamination Enclosure System).

- P. Equipment Decontamination Enclosure System: A decontamination system for waste materials and equipment, typically consisting of a designated area of the work area, a washroom, and a holding area, with an air lock between any two adjacent rooms and a curtained doorway between the holding area and the non-work area. Not to be used for personnel entry/exit.
- Q. Encapsulant (Sealant): A liquid material which can be applied to ACM and which controls the possible release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).
- R. Encapsulation: Application of an encapsulant to asbestos-containing building materials to control the possible release of asbestos fibers into the ambient air.
- S. Enclosure: Procedures necessary to completely enclose ACM behind air-tight, impermeable, permanent barriers.
- T. Excursion Limit (EL): The EL is an airborne concentration of asbestos to which no employee shall be exposed when not using respiratory protection. The EL is 1.0 f/cc as averaged over a 30 minute period.
- U. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area.
- V. Friable: Any material which, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, or is capable of being released into the air by hand pressure.
- W. Full Facepiece High Efficiency Respirator (FFHER): A respirator which covers the wearer's entire face from the hairline to below the chin and which is equipped with a HEPA filter.
- X. Half Mask High Efficiency Respirator (HMHER): A respirator which covers one-half of the wearer's face, from the bridge of the nose to below the chin, and is equipped with HEPA filters.
- Y. HEPA Filter: A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of the fibers of 0.3 micrometer or larger in diameter.
- Z. HEPA Vacuum Equipment: High efficiency particulate air (HEPA) filtered vacuuming equipment having a UL 586 filter system capable of collecting and retaining asbestos fibers.

- AA. Large Asbestos Project: Large asbestos project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 160 square feet or more of ACM, PACM or asbestos material or 260 linear feet or more of ACM, PACM or asbestos material.
- AB. Lockdown: Procedure of applying an encapsulant as a protective coating or sealant to a surface from which ACM has been removed in order to control and minimize airborne asbestos fiber generation that might result from residual asbestos-containing debris.
- AC. Minor Asbestos Project: Minor project shall mean an asbestos project involving the disturbance, enclosure, encapsulation, repair or handling of 10 square feet or less of ACM, PACM or asbestos material or 25 linear feet or less of ACM, PACM or asbestos material.
- AD. Movable Object: A unit of equipment or furniture which can be removed from the work area.
- AE. Plasticize: To cover floors and walls with plastic sheeting as herein specified.
- AF. Permissible Exposure Limit (PEL): The PEL is an airborne concentration of ACM to which no employee shall be exposed when not using respiratory protection. The OSHA PEL is 0.1 f/cc expressed on an 8-hour time weighted average (TWA).
- AG. Personnel Decontamination Enclosure System: A decontamination system for personnel and limited equipment, typically consisting of an equipment room, shower room, and clean room, with an air lock between any two adjacent rooms, and a curtained doorway between the equipment room and the work area, and a curtained doorway between the clean room and the non-work area. The decontamination system serves as the only entrance/exit for the work area.
- AH. Powered Air Purifying Respirator (PAPR): Either a full face-piece, helmet, or hooded respirator that powers breathing air to the wearer after the air has been purified through a HEPA filter.
- AI. Regulated Abatement Work Area: The portion of the restricted area where abatement work actually occurs. For tent work areas, the interior of each tent is a regulated abatement work area. For OSHA Class I and Class II asbestos abatement, the interior of the restricted area containment enclosure is the regulated abatement work area. For exterior non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or containment enclosures, the entire restricted area surrounding the abatement location is considered to be the regulated abatement work area.

- AJ. Removal: The act of removing and transporting asbestos-containing or asbestos-contaminated materials from the work area to a suitable disposal site.
- AK. Small Asbestos Project: Small asbestos project shall mean an asbestos project involving the removal, disturbance, repair, encapsulation enclosure or handling of more than 10 and less than 160 square feet of ACM, PACM or asbestos material or more than 25 and less than 260 linear feet of ACM, PACM or asbestos material.
- AL. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.
- AM Tent Procedure: A fire retardant polyethylene enclosure that includes walls, ceiling and a floor as required to remove ACM, PACM or asbestos material.
- AN. Type C Respirator: A respirator which supplies air to the wearer from a source outside the work area by means of a compressor.
- AO. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning tools which have been dampened with amended water or asbestos removal encapsulant and by afterwards disposing of these cleaning tools as asbestos-contaminated waste.
- AP. Work Area: Designated rooms, spaces, or areas of the project where asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained work area has been sealed, plasticized, and equipped with an airlock entrance or a decontamination enclosure system. A non-contained work area is an isolated or controlled-access area which has not been plasticized.

1.12 REQUIREMENTS AND QUALIFICATIONS:

- A. Minimum Experience: The Contractor shall have experience with abatement work, as evidenced through participation in at least **five** asbestos abatement projects of complexity comparable to this project.
- B. Experience and Training: The Contractor's job supervisors, foremen, and workers shall be adequately trained and knowledgeable in the field of asbestos abatement. All personnel engaged in asbestos abatement or related activities shall have New York State DOL certifications. All phases of the work shall be executed by skilled craftsmen experienced in each respective trade. Proof of such experience shall be submitted upon request by the Lakeland CSD. Improperly trained, untrained, or inexperienced personnel shall not be allowed in the work area(s). Personnel shall meet minimum training and experience requirements outlined in this Section.

1. The Contractor's on-site job supervisor shall have successfully completed, within the last twelve months, the NYSDOH-approved course "Supervision of Asbestos Abatement Projects", and shall be qualified as a NYSDOL-certified Contractor/Supervisor. Course must be provided by an NYSDOH-approved training provider. The supervisor shall have experience with abatement work, as evidenced through participation in at least two asbestos abatement projects of complexity comparable to this project.
 2. The job supervisors and foremen shall be thoroughly familiar with and experienced in asbestos removal and related work and shall meet the requirements of a competent person set down in OSHA Standard 29 CFR 1926.1101.
 3. All asbestos abatement workers shall be knowledgeable, qualified, and trained in the removal, handling, and disposal of asbestos material and in subsequent cleaning of the affected environment. All asbestos abatement workers shall be certified as having attended and satisfactorily completed asbestos worker training in accordance with OSHA Standard 29 CFR 1926.1101(k)(3). Course must be provided by an NYSDOH-approved training provider.
 4. The Contractor's job supervisors, foremen, and asbestos abatement workers shall be certified and licensed as required by the NYSDOL.
 5. Prior to commencement of work, all personnel who are to enter the work area shall be instructed in and shall be knowledgeable of the appropriate procedures for personnel protection and asbestos abatement. On-site training in the use of equipment and facilities unique to this job site shall be performed. Emergency evacuation procedures from the work area shall also be included in worker training.
- C. Supervision Requirements: The Contractor shall provide adequate job supervision for all phases of the asbestos abatement work.
1. The Contractor shall have a NYSDOL job supervisor present on site whenever work described in this Section is in progress. If the job supervisor leaves the site for any reason a qualified and certified supervisor, who meets the requirements of this Section and is familiar with the current status of the work, shall be designated. Lakeland CSD's Designated Representative shall be informed of the substitution. The supervisor must be familiar and experienced with asbestos removal and its related work, safety procedures, and equipment.

- D. Worker Medical Examinations: The Contractor shall provide medical examinations for all employees engaged in asbestos removal and disposal operations, in accordance with OSHA Standards 29 CFR 1910.134(b), 1926.1101, and applicable state regulations. The Contractor shall ensure that all employee examination results are on file in his office and available for review and are maintained in accordance with OSHA Standard 29 CFR 1926.1101 (n) (3).
- E. Certificate of Worker's Release: Each asbestos abatement worker, workers of other trades, or any supervisory personnel who enter the work area, or otherwise contact ACM, shall submit a Certificate of Worker's Release, as required in the Section "Submittal".

1.13 TESTING AND INSPECTION REQUIREMENTS AND RESPONSIBILITIES:

Visual inspections and air monitoring will be performed before, during, and after asbestos abatement to document airborne asbestos fiber concentrations as defined in this specification.

A. Lakeland CSD's Responsibilities:

1. Lakeland CSD will employ an Environmental Consultant to perform Project Monitoring and air testing. The project monitor will have the authority to approve the contractor's work, stop the contractor's work and direct the contractor to take corrective actions where required.
2. Area air samples will be collected and analyzed using NIOSH Method 7400. Air samples will be collected during each shift as required by the regulations.
3. Clearance testing by Transmission electron microscopy (TEM) will be conducted as per AHERA regulations. Air samples will be collected to demonstrate final re-occupancy clearance for work areas within the building. The fiber concentration must comply with the specified clearance level as per AHERA and this specification. Lakeland CSD will provide for collection and analysis of one round of samples required to demonstrate clearance in each discrete work area.
4. Lakeland CSD's Environmental Consultant will perform inspections of the work area, as specified, upon request of the Contractor.

B. Contractor's Responsibilities:

1. TEM air samples which fail to meet the re-occupancy clearance standard shall be paid for by the Contractor. Should a delay occur, due to failure(s) of clearance air testing, all associated expenses such as TEM analysis, and the Environmental Consultant's time for additional cleaning and air testing,

shall be paid by the asbestos contractor. If results of the inside work area group of air samples are unsatisfactory, recleaning of regulated abatement work area surfaces using wet methods, followed by another drying time period and then collection and analysis of an additional set (both inside and outside work area samples) of clearance air samples is required. If only the results of the outside work area group of air samples is unsatisfactory, clean-up of surfaces outside of the regulated abatement work area using HEPA-vacuums and wet-cleaning methods shall be performed prior to collection and analysis of an additional group of outside work area clearance air samples as required by ICR 56 Section 56-9.2. This recleaning/clean-up and sampling process shall be repeated until satisfactory clearance air sampling results have been achieved for all asbestos project non-exempt regulated abatement work areas throughout the entire work site.

2. The Contractor, at his/her expense, shall provide OSHA monitoring and all other all tests required by specified applicable regulations, codes, and standards and any other tests for his/her use. The use of a testing laboratory by Lakeland CSD does not release the Contractor from providing tests required for the protection and safety of his/her employees.
3. The Contractor shall employ an independent testing laboratory for analysis of OSHA personal air monitoring samples. The laboratory used for air sample analysis shall be successfully participating in the "Proficiency Analytical Testing (PAT) Program for Laboratory Quality Control for Asbestos." The monitoring shall be supervised by an Industrial Hygienist certified by the American Board of Industrial Hygiene (A.B.I.H.). Each testing laboratory shall be ELAP (Environmental Laboratory Accreditation Program) and NVLAP (National Voluntary Laboratory Accreditation Program) certified. Lakeland CSD shall approve the contractor's testing laboratory.
4. From each work area the Contractor, at his/her expense, shall collect and analyze OSHA personal air monitoring samples. Sampling shall be repeated during each different work activity. Sample collection and analysis shall be performed using the OSHA Reference Method as outlined in 29 CFR 1926.1101, Appendix A.
5. Results of all air monitoring performed by the Contractor shall be posted within 24 hours for regular abatement project after collection for all workers to see. A copy of the results shall be given to the Lakeland CSD's Environmental Consultant at the same time.

6. The Contractor shall be advised whenever questions arise concerning compliance with standards of quality and completeness of the work, and shall use his/her best efforts to resolve any such questions to the satisfaction of the Lakeland CSD's Environmental Consultant.
 7. Where air monitoring tests and/or inspections are specified, the Contractor shall notify Lakeland CSD's Environmental Consultant, in writing, 24 hours, in advance of the required test and/or inspection.
 8. The Contractor is responsible for ensuring the Work is complete to the level that meets the criteria of the inspection. The Contractor shall perform an inspection of the Work to evaluate completeness prior to requesting an inspection by the Lakeland CSD's Environmental Consultant.
- C. Time Requirements for Lakeland CSD's Environmental Consultant's Inspections and Testing: Where visual inspections or air testing is required to be performed by the Lakeland CSD's Environmental Consultant, the Contractor shall allow for the following response/analytical time for completion of the inspection/test.
1. Where visual inspections are required, allow 24 hours, beginning from the time the Contractor's request is received by the Lakeland CSD's Environmental Consultant, for the performance of the inspection.
 2. Where TEM clearance air monitoring tests are required, allow 24 hours, beginning from the time the Contractor's written request is received by the Lakeland CSD's Environmental Consultant, to the beginning of the air test.

PART 2 - PRODUCTS

2.01 MATERIALS:

Materials provided under this section shall be standard products of manufacturers regularly engaged in the production of the items and shall conform to OSHA Standard 29 CFR 1926.1101; EPA Standard 40 CFR 61, Subpart M; Department of Transportation Standards 49 CFR 171, 172, and 173; applicable state regulations; and requirements specified herein. Materials listed under this section "or equal" shall be provided for work under contract.

- A. Plastic: Provide fire retardant plastic of 6-mil thickness shall be provided in rolls of sizes which will minimize the frequency of joints. Fire retardant plastic sheet shall be used for plasticizing the enclosed work area, for preparation of the decontamination enclosure system, and for waste packaging.
- B. Reinforced Fire Retardant Plastic: Provide reinforced polyethylene sheet for the floor area of the decontamination enclosure system. Reinforced plastic sheet provided for this project shall be a 19 mil, 3-ply, high density flame resistant-reinforced-polyethylene sheet. Plastic color shall be opaque.

- C. Duct Tape: Duct tape shall be capable of sealing joints of adjacent sheets of plastic and of attaching plastic sheeting to finished surfaces without damage to existing finish and shall be capable of adhering under both dry and wet conditions, including use of amended water
- D. Surfactant: Surfactant (Wetting Agent) shall consist of resin materials in a water base, which have been tested to ensure materials are non-toxic and non-hazardous. Surfactants shall be installed according to the manufacturer's written instructions.
- E. Lockdown Encapsulants: Encapsulants used after asbestos removal to lockdown fugitive fibers shall carry a Class "A" fire resistance rating and shall have an ASTM E-162 flame spread index of 15 or less. A tint shall be given to the encapsulant by means of the addition of non-toxic, nonflammable colorings before application. The encapsulant shall be installed according to the manufacturer's written instructions.
- F. Caulking Sealant: Caulking sealant shall be single component, non-sag elastomer with 1600% elongation capacity. Sealant shall meet the requirements of Federal Specification TT-S-00230C, Class A Type II. Sealant shall be used to form an airtight seal around plywood barriers or temporary partitions, to seal along the seams of the decontamination enclosure system's plywood sheathing, and to seal around piping or other small penetrations of the work area. Sealant application shall be according to the manufactures written instructions.
- G. Foam Sealant: Foam Sealant shall be expanding urethane Class 1 foam sealant with an Underwriters Laboratories, Inc. (U.L. 723) flame spread index of 25 or less, smoke developed index of 0, and a minimum operating temperature range between -30°F and 250°F.
- H. Plywood: Plywood used for temporary partitions, decontamination enclosure systems, and tunnels shall be an exterior grade and a minimum 3/8-inch thick.
- I. Spray Adhesive: Spray Aerosol Adhesive shall be specially formulated to stick to sheet polyethylene (3M 76, 3M 77, or equivalent).
- J. Other Materials: All other materials, such as lumber, plywood, tools, scrapers, brushes, cleaning materials, adhesive, nails, hardware, etc., which are required to perform the work described in this Section shall be provided. Materials and equipment shall be new or used, uncontaminated by asbestos, in serviceable condition, and appropriate for the intended purpose.
- K. Disposal Bags: Plastic Disposal Bags shall be a minimum of six mils in thickness. Bags shall be labeled in accordance with this Section.

- L. Shipping Containers: Impermeable Containers shall be suitable to receive and retain any asbestos-containing or asbestos-contaminated materials until they are disposed of at an approved landfill. The containers shall be labeled in accordance with this Section. Containers shall be both airtight and watertight and conform to DOT Standard 49 CFR 178.224. Each container shall be constructed of fiber, hard plastic, or metal, with locking, airtight lids.
- M. Markings and Labels: Disposal bags and shipping containers shall bear danger labels, transportation packaging labels, and generator identification information. Labels shall be permanently affixed to all bags and shipping containers containing ACM, in accordance with OSHA Standard 29 CFR 1926.1101(k)(2), DOT Standard 49 CFR Part 171 and 172, and EPA Standard 40 CFR Part 61.150(a)(1)(v).
 - 1. Danger label format and color shall conform to OSHA Standard 29 CFR 1926.200. Danger labels shall display the following legend/information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG
DISEASE HAZARD

- 2. DOT Marking and Labels: Markings and labels shall be permanently affixed to all bags and containers containing ACM, in accordance with DOT 49 CFR 172.304 and 172.407.
 - a. Markings shall display the following text:

RQ, ASBESTOS, NA 2212
 - b. Labels shall be diamond shape and shall be located near the Marking text. Labels will consist of a diamond a minimum of 100 millimeters (mm) on each side with each side having a solid line inner boarder 5.0 to 6.3 mm from the edge. The label shall be white with seven black vertical stripes on the top half. Black stripes and white spaces shall be equally spaced. The lower half of the label shall be white with the class number "9" underlined and centered at the bottom. Refer to DOT 40 172.446 for label format.
 - 3. Generator identification information shall be affixed to each DOT label format and color shall conform to DOT Standard 49 CFR 172.304. Generator identification information labels shall display the following legend/information:

GENERATOR'S NAME
GENERATOR'S 24 HOUR PHONE
GENERATOR'S FACILITY ADDRESS

- N. Reuse of Containers: If impermeable containers used to transport bagged asbestos waste to the landfill are to be reused, the empty containers shall display the following label:

RESIDUE:
LAST CONTAINED ASBESTOS RQ

- O. Warning Signs: Warning Signs shall be posted at the perimeter of the work area prior to abatement operations in accordance with OSHA Standard 29 CFR 1926.1101. Danger sign format and color shall conform to OSHA Standard 29 CFR 1926.200. The signs shall display the legend indicated below:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY
RESPIRATORS AND PROTECTIVE
CLOTHING ARE REQUIRED IN THIS AREA

- P. Mastic remover. The contractor shall use an odorless mastic remover. Manufacture and brand of mastic remover shall be approved by the Facility prior to commencing removal work.

2.02 EQUIPMENT:

Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.

- A. Spraying Equipment: Equipment used to apply amended water or removal encapsulant shall be of a low pressure type to prevent disturbance of the asbestos prior to physical controlled removal. Airless spray equipment shall be provided for the application of asbestos encapsulant.
- B. Vehicles: Trucks or Vans used for the transportation of asbestos waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of asbestos-contaminated waste without exposure to persons or property.
- C. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.

- D. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in each decontamination enclosure equipment room, and clean room. Supply 2 additional extinguishers inside the work area
- E. Smoke Detectors: Smoke detectors of the battery powered ionization type will be required at a rate of one per 5,000 square feet, with a minimum of one smoke detector in the decontamination enclosure clean room, and one in the work area.
- F. Water Filtration System: A system capable of filtering and retaining particles larger than 5.0 microns in size shall be provided.
- G. Carts: Provide water tight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged asbestos waste from the decontamination enclosure system to the waste storage container or transport vehicle.
- H. Power Tools: Provide power tools necessary to complete the Work. Power tools used directly for asbestos removal shall be equipped with a dust collection system. Attach a shroud connected to a HEPA vacuum system for capture of dust.

2.03 WORKER PROTECTIVE CLOTHING AND EQUIPMENT:

Protective clothing and equipment shall conform to OSHA Standard 29 CFR 1926.1101

- A. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting, full-body, disposable coveralls, head covers, gloves, and 18-inch high boot-type foot covers. Disposable coveralls, head covers, and 18-inch high boot-type foot covers shall be constructed of material equal to DuPont "TYVEK-Type 14" or Kimberly-Clark "Kleenguard", as a minimum requirement.
 - 1. The Contractor shall provide authorized visitors and the Lakeland CSD's Environmental Consultant suitable properly fitting protective disposable clothing, headgear, hard hats, eye protection, respiratory protection, and footwear (up to four sets per 8-hour shift) whenever they are required to enter the work area.
- B. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.

- C. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals in the work area. Types of respirators used shall be approved by MSHA/NIOSH for asbestos in accordance with OSHA Standard 29 CFR 1926.1101 and 29 CFR 1910.134. The Contractor shall provide a level of respiratory protection which supplies an airborne fiber level inside the respirator below 0.01 fibers per cubic centimeter (f/cc), as the minimum level of protection allowed. Determine the proper level of protection by dividing the actual airborne fiber count in the work area by the "protection factors" given below for each respirator type:

<u>Respirator Type</u>	<u>Protection Factor</u>

Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Half-facepiece	10

Air purifying: Negative-pressure respirator, High efficiency HEPA filter, Full-Facepiece	50 (quantitative)

Powered air purifying (PAPR): Positive pressure respirator High efficiency HEPA filter, Full-facepiece	1000

<u>Respirator Type</u>	<u>Protection Factor</u>

Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000

Type C supplied air: Positive-pressure respirator, Pressure-demand, Full-facepiece HEPA escape	1000

Type C supplied air: Pressure-demand, Full-facepiece equipped with an auxiliary SCBA	1000

1. The Contractor shall provide workers with individually issued and marked respiratory equipment. Respiratory equipment shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
2. During the use of supplied air systems the Contractor shall provide authorized visitors, Lakeland CSD's Environmental Consultant, and the testing laboratory representative with individually issued and marked respiratory equipment (up to six units). Respiratory equipment shall be compatible with the supplied air system in use, and shall be suitable for the asbestos exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1926.1101, and as more stringently specified otherwise, herein.
3. Where respirators with disposable filter parts are employed, the Contractor will provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.
4. Breathing air supply systems shall conform to the USEPA NIOSH Document EPA-560-OPTS-86-001 (September 1986) entitled "A Guide to Respiratory Protection for the Asbestos Abatement Industry."
5. The Contractor shall have a minimum of two spare air hoses with connectors to permit the Lakeland CSD's Environmental Consultant or testing laboratory's representative to connect his/her assigned Type C respirator to the air system at any time without having to wait for personnel to exit the work area in order to obtain a spare hose.

PART 3 - EXECUTION

3.01 DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Personal decontamination system enclosures shall be constructed and functional prior to commencing the regulated abatement work area preparation activities. Waste decontamination system enclosures shall be constructed and functional at the completion of preparation activities. After installation of the personal decontamination system enclosure, all access to the regulated abatement work area shall be via the installed personal decontamination system enclosure.
- B. Personal Decontamination System Enclosure - Large Project.
 - (1) Enclosure – General. A personal decontamination system enclosure shall be provided outside the regulated abatement work area and in close proximity

to all locations where personnel shall enter or exit the regulated abatement work area. One personal decontamination enclosure system for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The personal decontamination system enclosure shall be sized to accommodate the number of workers and equipment required for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, personal decontamination enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance with all federal, state and local government requirements. This system shall remain on-site, operational and be used until completion of Phase II C of the asbestos project.

- (2) Rooms and Configuration. The personal decontamination system enclosure shall consist of a clean room, a shower room and an equipment room connected in series but separated from each other by airlocks. There shall be a curtained doorway separation between the equipment room and the regulated abatement work area, and there shall be a lockable door to the outside. (See Figure 1 within ICR 56) Minimum dimensions for each airlock, shower room and equipment room shall be three (3) feet wide by six (6) feet in height, to allow for adequate access to and from the regulated abatement work area.
- (3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.
- (4) Framing. Enclosures systems accessible to the public shall be fully framed, hard-wall sheathed and utilize a lockable door for safety and security.
- (5) Sheathing. A plywood or oriented strand board (OSB) sheathing material of at least 3/8-inch thickness.

- (6) Plastic Sheetting. Enclosure systems constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for floor protection of this area.
- (7) Prefabricated or Trailer Units. A completely watertight fiberglass or marine painted prefabricated unit does not require plasticizing. Rooms shall be configured as per paragraph (2) of this Section. All prefabricated or trailer decontamination units shall be kept in good condition, and shall be completely decontaminated after final cleaning and immediately prior to clearance air sampling. Upon receiving satisfactory clearance air results, the prefabricated units shall be sealed then separated from the regulated abatement work area and removed from the site.
- (8) Clean Room. The clean room shall be sized to accommodate a full workshift of asbestos abatement contractor personnel, as well as the air sampling technician and the project monitor. The clean room shall be a minimum of six (6) feet in height. A minimum of thirty-two (32) square feet of floor space shall be provided for every six (6) full shift abatement workers, calculated on the basis of the largest work shift. If the largest work shift consists of three (3) or less full shift abatement workers, the minimum clean room size requirement is reduced to twenty-four (24) square feet of floor space. Benches, lockers and hooks shall be provided for street clothes. Shelves for storing respirators shall be provided. Clean clothing, replacement filters for respirators, towels and other necessary items shall be provided. The clean room shall not be used for storage of tools, equipment or materials. It shall not be used for office space. A lockable door shall be provided to permit access to the clean room from outside the regulated abatement work area or enclosure and shall be used to secure the regulated abatement work area and decontamination enclosure during non-work hours.
- (9) Shower Room. The shower room shall contain one (1) shower per every six (6) full shift abatement workers, calculated on the basis of the largest work shift. Multiple showers shall be simultaneously accessible (installed in parallel) to certified personnel. Each showerhead shall be supplied with hot and cold water adjustable at the tap. The shower enclosure shall be constructed to ensure against leakage of any kind. Uncontaminated soap, shampoo and towels shall be available at all times. Shower water shall be drained, collected and filtered through a system with at least 5.0-micron particle size collection capability. Submersible pumps shall be installed, maintained and utilized in accordance with pertinent OSHA regulations and manufacturer's recommendations. A multi-stage filtering system containing a series of several filters with progressively smaller pore sizes shall be used

to avoid rapid clogging of the filtering system by larger particles. Filtered wastewater shall be discharged in accordance with applicable codes. Contaminated filters shall be disposed of as asbestos-contaminated waste.

- (10) Equipment Room. The equipment room shall be used for the storage of decontaminated equipment and tools. A one (1) day supply of replacement filters for HEPA-vacuums and negative pressure ventilation equipment in sealed containers, extra tools, containers of surfactant and other materials and equipment that may be required during the abatement project may also be stored here. A container lined with a labeled, at least six (6) mil plastic bag for collection of clothing shall be located in this room. Contaminated footwear and work clothes shall be stored in this area.
- (11) Airlocks. Airlock construction shall consist of two (2) curtained doorways with three (3) alternating six (6) mil fire retardant polyethylene curtains per doorway, separated by a distance of at least three (3) feet, such that one passes through one doorway into the airlock, allowing the doorway sheeting to overlap and close off the opening before proceeding through the next doorway. Minimum airlock size shall be three (3) feet wide, by three (3) feet long, by six (6) feet in height.

C. Personal Decontamination System Enclosure - Small Project

- (1) Enclosure Requirements. A personal decontamination system enclosure for a Small asbestos project shall consist of, at a minimum, an equipment room, a shower room and a clean room separated from each other and from the regulated abatement work area and other areas by curtained doorways as defined in ICR 56 Section 56-2.1. All other provisions for personal decontamination system for a Large asbestos project shall apply. Equipment storage, personal gross decontamination and removal of clothing shall occur in the equipment room just prior to entering the shower. (See Figure 4 in the ICR 56) The full personal decontamination system enclosure specified for Large asbestos projects is recommended.

D. Remote Personal Decontamination System Enclosure. If a personal decontamination system cannot be attached to the regulated abatement work area, due to available space restrictions or other building and fire code restrictions, a remote personal decontamination system enclosure may be used for limited Special Projects as per subpart 56-11, negative pressure tent enclosure work areas with glovebag only abatement, or if non-friable ACM is being removed in a manner which will not render the ACM friable.

Limitation. If it is found during removal, that the non-friable ACM or asbestos material will become friable during the removal process, and it is logistically possible to attach the decontamination system enclosure,

abatement work must stop immediately while the remote personal decontamination system is relocated to be attached and contiguous to the regulated abatement work area.

The following requirements apply for all remote personal decontamination systems:

- (1) Protective Clothing. Workers shall don two (2) sets of disposable protective clothing and a supply of protective clothing shall be kept in the airlocks attached to the regulated abatement work area.
- (2) Location. The remote personal decontamination system shall be constructed as close to the regulated abatement work area as physically possible. If the remote personal decontamination system must be located at the exterior of the building/structure due to space or code restrictions, it shall be constructed within fifty (50) feet of the building/structure exit used for access by the asbestos abatement contractor personnel. The decontamination unit shall be cordoned off at a distance of twenty-five (25) feet to separate it from public areas.
- (3) Airlocks. At a minimum, two (2) extra airlocks as defined in ICR 56 Section 56-2.1 shall be constructed as per ICR 56 Section 56-7.5(b)(11). One shall be constructed at the entrance to the equipment room or equipment/washroom. The other extra airlock shall be constructed at the entrance to the containment or regulated abatement work area(s). These airlocks shall have lockable doorways at the entrance to the airlock from uncontaminated areas. These airlocks shall be cordoned off at a distance of twenty-five (25) feet and appropriately signed in accordance with ICR 56 Section 56-7.4(c). Airlocks shall not be used as a waste decontamination area and shall be kept clean and free of asbestos containing material.
- (4) Designated Pathway. The walkway from the regulated abatement work area to the personal decontamination system or next regulated abatement work area shall be cordoned off and signage installed as per ICR 56 Section 56-7.4(c), to delineate it from public areas while in use during Phase IIA through IID.

- (5) Travel Through Uncontaminated Areas. If at any time a worker must travel through an uncontaminated area to access the personal decontamination area, the worker shall HEPA-vacuum and/or wet wipe his/her outer protective clothing while in the regulated abatement work area, then proceed into the airlock, which serves as a changing area, where he/she shall remove the outer clothing and don a clean set of protective clothing. The worker may then proceed to the personal decontamination system enclosure only along a designated pathway as described above. Travel in any other area shall not be allowed.
- (6) Removal. The remote personal decontamination unit shall be removed only after satisfactory clearance air sampling results have been achieved.

E. Waste Decontamination System Enclosure - Large and Small Asbestos Projects.

- (1) Enclosure – General. A waste decontamination system enclosure shall be provided outside the regulated abatement work area and shall be attached to the regulated abatement work area. One (1) waste decontamination enclosure for each regulated abatement work area shall be required. This system may utilize adequate existing lighting sources separate from the decontamination system enclosure, or shall be supplied with a GFCI protected temporary lighting system. The waste decontamination system enclosure shall be sized to accommodate the number of workers and equipment for the intended purpose. Such system may consist of existing attached rooms outside of the regulated abatement work area, if the layout is appropriate, that can be plasticized and are accessible from the regulated abatement work area. When this situation does not exist, enclosure systems may be constructed of metal, wood or plastic supports covered with fire-retardant plastic sheeting. A minimum of one (1) layer of six (6) mil fire-retardant plastic sheeting shall be installed on the ceiling, and walls of the enclosure system. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of this area. This system must be kept clean, sanitary and climate controlled at all times in conformance to all federal, state and local government requirements. This system shall remain and be used until completion of Phase II C of the asbestos project.
- (2) Rooms and Configuration. A waste decontamination system enclosure shall consist of a washroom and a holding area connected in series but separated from each other by an airlock. There shall be a lockable door to the outside, and there shall be a curtained doorway between the washroom and the regulated abatement work area. (See Figure 2 in the ICR 56)

- (3) Curtained Doorway. An assembly which consists of at least three (3) overlapping sheets of six (6) mil fire retardant plastic over an existing or temporarily framed doorway. One (1) sheet shall be secured at the top and left side, the second sheet at the top and right side, and the third sheet at the top and left side. All sheets shall have weights attached to the bottom to insure that the sheets hang straight and maintain a seal over the doorway when not in use.
- (4) Washroom. A room/chamber between the regulated abatement work area and the holding area in the waste decontamination system enclosure, where equipment and waste containers are wet cleaned or HEPA-vacuumed. Adequate drainage and bag/container wash water shall be provided within the room/chamber, as well as a sufficient quantity of clean waste bags/containers.
- (5) Equipment/Washroom Alternative. Where there is only one (1) exit from the regulated abatement work area, the holding area of the waste decontamination system enclosure may branch off from the equipment room of the personal decontamination system enclosure. The equipment room will also be used as a waste washroom. (See Figure 3 in the ICR 56)
- (6) Plastic Sheeting. Waste decontamination system enclosures constructed at the work site shall use at least one (1) layer of six (6) mil fire-retardant plastic sheeting on walls and ceiling. At least two (2) layers of six (6) mil fire-retardant reinforced plastic sheeting shall be used for flooring protection of these areas.
- (7) Enclosure Security. The waste decontamination system enclosure and regulated abatement work area airlock(s) (when remote decontamination systems are used) shall be constructed with lockable doors to prevent unauthorized entry. Enclosures systems located within twenty-five (25) feet of an area of public access shall be fully framed and hard-wall sheathed for safety.
- (8) Drains. The waste washroom shall be equipped with a wash bin of sufficient size to perform waste

container washing operations and shall have a submersible pump installed to collect waste water and deliver it to the shower wastewater filtration system where it shall be filtered in accordance with paragraph (b)(9) of this Section.

- (9) Shower/Washroom Alternative - Small Asbestos Project. For Small asbestos projects with only one (1) exit from the regulated abatement

work area, the shower room may be used as a waste washroom. The clean room shall not be used for waste storage, but shall be used for waste transfer to carts, which shall be immediately removed from the enclosure. Waste shall be transferred only during times when the showers are not in use. (See Figure 4 in this Section)

- F. Waste Decontamination System Enclosure – When Remote Personal Is Allowed. When a remote personal decontamination system enclosure is allowed and utilized for a regulated abatement work area, the following requirements shall apply:

- (1) Minor Size Regulated Abatement Work Area. No specific waste decontamination system enclosure is required for minor size regulated abatement work areas. The waste generated shall be immediately bagged/containerized within the regulated abatement work area.
- (2) Small & Large Size Regulated Abatement Work Areas.
 - (i) Washroom. An additional chamber shall be constructed within the regulated abatement work area, attached to the existing airlock used to access the work area. The washroom/airlock combination shall be utilized as the contiguous waste decontamination enclosure for waste bagging/containerization and waste transfer activities. The washroom shall be constructed and supplied with equipment/materials consistent with waste decontamination system enclosure washroom requirements for contiguous personal and waste decontamination system enclosures.
 - (ii) Removal. The washroom chamber shall be removed only after satisfactory clearance air sampling results have been achieved

3.02 PERSONNEL PROTECTION AND DECONTAMINATION PROCEDURES:

- A. General: The Contractor shall take all safety measures and precautions necessary to protect his/her employees and building occupants in accordance with OSHA Standard 29 CFR 1926, EPA Standard 40 CFR, Part 61, Subpart M, and applicable state and city regulations. The Contractor shall be solely responsible for enforcing personnel protection requirements.
1. After the installation of the personal decontamination system, full PPE in compliance with current OSHA regulations shall be worn in regulated abatement work areas during preparation activities, for all friable OSHA Class I or Class II asbestos projects. Asbestos abatement contractor's respirator selection, filter selection, medical surveillance and respiratory training must be consistent with current OSHA regulations. Appropriate respiratory protection is also required of all authorized visitors.
 2. Workers or authorized visitors shall not eat, smoke, drink, or chew gum or other substances while in the work area(s) or decontamination area(s).
 3. Contaminated worker footwear, eye protection, and hard hats shall be stored in the equipment room when not in use in the work area and, upon completion of asbestos abatement, disposed of as asbestos-contaminated waste or decontaminated for reuse.
 4. Entry to the personal and waste decontamination system enclosures shall be restricted to the asbestos contractors involved with the asbestos project, appropriately certified employees of the asbestos contractors, authorized visitors, police, fire and other public safety personnel.
 5. Asbestos workers shall not wear any jewelry; e.g. watch, necklace, etc. while in the work area or decontamination area.
- B. Worker Respiratory Protection: With approval from the Lakeland CSD's Environmental Consultant, historical airborne fiber level data may serve as the basis for selection of the level of respiratory protection to be used for the time interval prior to the Contractor establishing the eight-hour time weighted average (TWA) for an abatement task. Historical data provided by the Contractor shall be based on OSHA personal air monitoring of the "breathing zone" of his/her employees for other asbestos abatement projects, and the data were obtained during work operations conducted under work place conditions closely resembling the processes, type of material, control methods, work practices, and environmental conditions used and prevailing in the Contractor's current operations. Documentation of aforementioned results shall be presented to the Lakeland CSD's Environmental Consultant for review of applicability. (See "Submittal, Pre-Project

Information." This will not relieve the Contractor in providing personal air monitoring to determine the TWA for the work under contract. The TWA shall be determined in accordance with 29 CFR 1926.1101. After the TWA is established, the Contractor may provide respirators as presented in the Specification. The minimum level of protection for TSI and/or Surfacing Materials abatements is full face-piece Powered Air Purifying Respirator (PAPR).

1. Review safety data sheets (SDS) for products to be used during the work. Follow recommendations as given by the product manufacturer for personnel protection required to be worn during product application.
2. Personal Air Monitoring Requirements: The Contractor's CIH shall be responsible for development and implementation of a personal air monitoring program in accordance with OSHA Standard 29 CFR 1926.1101, good industrial hygiene practices, and the requirements herein. Personal air monitoring shall be performed by an independent testing laboratory and supervised by the Contractor's CIH. Documentation of air sampling shall include as a minimum, calculations of minimum sample volume to achieve necessary detection limits; sampling time; sampling location (or subject); evidence of periodic inspection of sampling equipment; documentation of daily pre- and post-calibration of sampling equipment; detailed description of worker protective devices; description of any typical environmental conditions; and a description of work practices/procedures/controls in operation during the sampling period. Documentation of sample analysis shall include, as a minimum, sample identification; total sample duration, sample flow rate; the "Limit of Reliable Quantification"; total air volume; total fibers counted (with work sheets); total fields counted; blank filter analysis; and reticule field area. Airborne fiber concentrations in fibers per cubic centimeter (f/cc) shall be calculated and reported at the 95 percent confidence level.
3. Full-shift personal exposure air sampling of workers shall be performed to establish the 8-hour (TWA) exposure. Such sampling shall be conducted for each employee (or representative group of employees, at least one sample per eight man crew) expected to evidence the highest exposure in each work area for each type of activity on the first shift that site preparation, removal, or cleanup activities occur. Similarly, 30-minute personal exposure air sampling shall be conducted during activities anticipated to produce the highest airborne concentrations to determine the Excursion Limit. Personal exposure sampling shall be repeated everyday as per protocol requirements where removal and cleanup operations are conducted for the duration of the project, or at any time that conditions indicate to the Contractor or the Contractor's CIH that the most recent personal sampling results are no longer indicative of employee exposure. PCM personal samples shall be collected and analyzed according to the

OSHA Reference Method in OSHA Standard 29 CFR 1926.1101, Appendix B.

C. Personnel Entrance and Decontamination Procedures for Gross Removal Operations Utilizing NYSDOL ICR 56-11.7 for Non Friable Flooring and/or Mastic Removal:

The following entry/exit procedures shall be used for gross removal:

1. All workers and authorized visitors shall enter the work area through the worker decontamination enclosure system.
2. All individuals who enter the work area shall sign the entry log, located in the clean room, upon each entry and exit. The log shall be permanently bound and shall identify fully the facility, agents, contractor(s), the project, each work area and worker respiratory protection employed. The site supervisor shall be responsible for the maintenance of the log during the abatement activity.
3. Each worker or authorized visitor shall, upon entering the job site, remove street clothes in the clean room and put on a clean respirator (with new filters, if appropriate) and clean protective clothing before entering the work area through the shower room and equipment room.
4. Each worker or authorized visitor shall, each time he/she leaves the work area: remove gross contamination from clothing before leaving the work area; proceed to the equipment room and remove all clothing except the respirator; still wearing the respirator, proceed to the shower room; clean the outside of the respirator with soap and water while showering; remove filters, wet them, and dispose of them in the container provided for that purpose; wash and rinse the inside of the respirator; and thoroughly shampoo and wash himself/herself.
5. Following showering and drying off, each worker or authorized visitor shall proceed directly to the clean room, dress in street clothes, and exit the decontamination enclosure system immediately. Disposable clothing of the type worn inside the work area is not permitted outside the work area.

3.03 PREPARATION OF WORK AREA:

The following Paragraph "General Preparations" outlines procedures applicable to all work areas. Work procedures specific for preparing each asbestos removal area is addressed in its respective Subparagraph. If a site specific variance is approved, procedures outlined in the variance will supercede this specification.

A. General Preparations: The following general preparations shall be used for all work areas being abated:

1. Erect barricades; post notices and warning signs.
 2. Provide and install decontamination enclosure systems in accordance with Article 3.01, "Decontamination Enclosure Systems" of this Section.
 3. Seal drains and other collection devices with 6-mil plastic and plywood, as necessary, and provide a system to collect all water used by the Contractor. Collected water shall be passed through a water filtration system prior to being discharged into the sanitary sewer.
 4. Ensure that the Contractor's approved Fall Protection Equipment (if applicable) is in place, in operating condition, and in operation during work described in this section.
 5. Maintain emergency and fire exits from the work areas or establish alternative exits satisfactory to the local fire officials. Emergency exits and routes shall be established and clearly marked with florescent paint or other effective designations to permit easy location from anywhere within the work area. Emergency exits shall be secured to prevent access from uncontaminated areas and yet permit emergency exiting. Exits shall be checked daily against exterior blockage or impediments to exiting.
 6. Temporary lighting within the work area and decontamination system shall be provided as required to achieve minimum illumination levels.
 7. Hand power tools used to drill, cut into, or otherwise disturb ACM shall be equipped by manufacture with HEPA filtered local exhaust ventilation.
 8. Hot and cold water may not be available in all work areas. In such cases sufficient heating equipment shall be provided to maintain a necessary supply of hot water for showers.
- B. Friable Asbestos-Containing Pipe/fittings Insulation Tent Work Areas:
1. A decontamination system that complies with Subpart 56-7.5 shall be installed or constructed before any preparatory work in the work area and before any disturbance of asbestos material. The decontamination enclosure system shall be located as close to the work area as possible. The decontamination unit may be mobile.
 2. An airlock and attached washroom constructed of one (1) layer of 6 mil. polyethylene sheeting shall be attached to the work area if a remote decontamination unit is utilized.
 3. The work area, decontamination units, airlocks and dumpster shall be

cordoned off with asbestos warning tape and signs at a distance of ten (10') feet where feasible and shall remain vacated except for certified workers until satisfactory clearance air monitoring results have been achieved.

4. All access areas between the work area and the decontamination enclosure system shall be restricted or cordoned off with caution tape and signage to prevent access of non-certified personnel into the work area.
5. All electric power in the work area shall be shut down and locked out. In the event this is not possible as per 56-7.7 (c), the live electric shall be maintained within those conduits, cables, panels and boxes as per following conditions:
 - a) All live cables, electrical panels and boxes that run through the work areas shall be wrapped with three (3) layers of 6-mil plastic sheeting. Each layer shall be individually taped and sealed separately. All three (3) layers of polyethylene sheeting shall be left in place until satisfactory clearance air monitoring results have been obtained.
 - b) Any energized circuits remaining in the work areas shall be posted with a two (2) inch high lettering warning sign which reads: DANGER-LIVE ELECTRICAL-KEEP CLEAR. The sign shall be placed on all live covered barriers at maximum of (10) ten-foot intervals. These signs shall be posted in sufficient numbers to warn all persons authorized to enter the work areas of the existence of the energized circuits.
 - c) All electrical power for the removal project shall be brought into the work area through a separate GFI panel box located outside the work area.
6. Critical/isolation barriers shall be constructed in the Work Area using minimum of two layers of 6-mil polyethylene sheeting and plywood (where required). Alternatively, the contractor has the option to perform the work utilizing a Tent Enclosure. If a Tent enclosure is utilized, it shall be constructed in accordance with IRC 56 Subpart 7.11 (f) (1) (only for drain bowl work areas). The Work Area shall be exhausted utilizing negative air units to achieve six (6) air changes per hour for critical/isolation barrier work areas or four (4) air changes per hour for Tent Enclosure work areas. Sufficient negative air handling equipment shall be utilized on site in order to achieve required negative air pressure within the work area (See Appendix A).
6. A four (4) hour pre-abatement settling period is required prior to commencement of ACM removal activities.

3.04 PRE-REMOVAL INSPECTIONS:

- A. Prior to removal of any ACM the Contractor shall notify the Lakeland CSD's Environmental Consultant and request a pre-removal inspection. Posting of warning signs, plasticizing of work area, building of decontamination enclosure systems, and all other preparatory steps have been taken prior to notification of Lakeland CSD's Environmental Consultant. The Contractor shall not begin asbestos removal until the Lakeland CSD's Environmental Consultant approves the work area preparations.

3.05 MAINTENANCE OF CONTAINED WORK AREA AND DECONTAMINATION ENCLOSURE SYSTEMS:

- A. Repair damaged barriers and remedy any defects immediately upon their discovery. Visually inspect barriers at the beginning and end of each work period.
- B. Visually inspect non-Work Areas and the decontamination enclosure system for water leakage. Check the floor below, ceiling and walls, and view beneath/or around the decontamination enclosure system, for signs of leakage. Perform the visual inspection a minimum of twice each 8- hour work shift.
- C. Ensure that both hot and cold water exist in sufficient supply for the decontamination enclosure system.

3.06 REMOVAL OF ASBESTOS-CONTAINING MATERIAL:

The Asbestos Contractor shall be responsible for the proper removal of ACM from the Work Area using standard abatement industry removal techniques. The Environmental Consultant or their representative shall observe the Work. Approval of the Asbestos Contractor's abatement techniques is required by the Environmental Consultant to allow for the continuance of work.

- A. Removal of Friable Asbestos-Containing Pipe Insulation/Fittings in Tent Enclosures:

- 1. Materials removed shall be containerized or immediately wrapped in two (2) layers of six (6) mil fire retardant plastic sheeting and secured air tight prior to transport to the waste decontamination facility. Residual non-friable ACM shall be wet scraped by manual means and HEPA vacuumed and

likewise containerized and secured air tight prior to transport to the waste decontamination facility.

2. Asbestos containing materials will not be allowed to accumulate in the work area

B. Additional Removal Requirements:

1. Lakeland CSD's Environmental Consultant shall issue a stop work order if visible emissions are detected outside the work areas and/or should the fiber count in adjacent non-work areas exceed 0.01 f/cc of air or the background count (use the greater of these two values as the reference). Work shall not resume until the condition(s) causing the increase are corrected, surfaces outside of the work area are decontaminated using HEPA vacuums or wet cleaning techniques and the Contractor receives written notice from Lakeland CSD's Environmental Consultant.

3.07 ACM WASTE PACKAGING AND LOAD OUT PROCEDURES:

- A. Packaging of ACM shall conform to OSHA Standard 29 CFR 1926.1101, DOT 49 CFR 171,172, and 173, EPA Standard 40 CFR Part 61, New York City Department of Sanitation (in relation to transport, storage, and disposal of ACM) and the requirement as heretofore specified. ACM waste shall be placed in a wet condition into properly labeled disposal bags or sealed in two layers of 6-mil plastic sheeting wrapped airtight and properly labeled. Materials to be transported through a non-Work Area building space shall be placed in hard wall shipping containers for handling. Specific requirements for decontamination of waste containers, and load out through the decontamination enclosure systems is outlined below:
- B. Frequency of Waste Removal: Properly packaged and labeled asbestos waste shall be removed from the site on a daily basis. Under no circumstance shall asbestos waste be stored on site. The waste hauler and landfill shall be as indicated on the notifications to regulatory agencies.
- C. Waste Load-out Through Waste Decontamination Unit: Place asbestos waste in disposal bags. Large items not able to fit into disposal bags shall be wrapped in one layer of 6-mil thick plastic sheeting. Clean outer covering of asbestos waste package by wet cleaning and/or HEPA vacuuming in a designated part of the Work Area. Move wrapped asbestos waste to the washroom, wet clean each bag or object and place it inside a second disposal bag, or a second layer of 6-mil plastic sheeting, as the item's physical characteristics demand. Air volume shall be minimized, and the bags or sheeting shall be sealed airtight with tape.
- D. The clean containerized items shall be moved directly to the Waste Hauler's truck pending load-out to storage or disposal facilities.

- E. Workers who have entered the decontamination enclosure system from the uncontaminated non-work area shall perform load-out of containers from the decontamination enclosure holding area. Dress workers asbestos waste to storage or disposal facilities in clean overalls of a color different than from that of coveralls used in the Work Area. Ensure that workers do not enter from uncontaminated areas into the equipment washroom or the Work Area. Ensure that contaminated workers do not exit the Work Area through the equipment decontamination enclosure system.
- F. Thoroughly clean the decontamination enclosure system immediately upon completion of the waste load-out activities, and at the completion of each work shift.
- G. Labeled ACM waste containers or bags shall not be used for non-ACM debris or trash. Any materials placed in labeled containers or bags, whether turned inside out or not, shall be handled and disposed of as ACM waste.

3.08 CLEANUP AND CLEARANCE TESTING OF WORK AREAS:

The following cleanup procedures shall be performed during abatement.

- A. Non-Friable Materials
 - 1. Visible accumulations of loose asbestos containing waste material shall be cleaned up using rubber or plastic dustpans and rubber squeegees or HEPA filtered vacuums. Metal shovels may also be used, except in the vicinity of plastic sheeting, critical barriers and isolation barriers, which could be perforated by these tools. To pick up excess water and gross wet debris, a wet-dry HEPA filtered shop vacuum dedicated to asbestos abatement may be used. This cleaning shall be done whenever there is sufficient asbestos waste material to fill a single leak-tight bag/container, or this cleaning shall be done at the end of each work shift whichever shall occur first. Visible debris shall be maintained adequately wet.
 - 2. Work shall stop whenever excessive water accumulation or flooding is present in the area and shall not resume until the water is collected and disposed of properly.
 - 3. Final clean-up and clearance procedures for abatement shall comply with ICR 56 Section 56-9 is to be performed.
 - 4. One (1) (4) hour post-abatement settling/drying periods are required prior to commencement of final air sampling activities for manual wet removals.

5. Air sampling and analysis on asbestos projects conducted under this Section is required. Air sampling and analysis shall then be conducted in accordance with the requirements of ICR 56 Subpart 56-4.

a. A minimum of five TEM air samples will be collected inside and five outside the work area to determine final air clearance re-occupancy. All TEM results must satisfy the clearance criteria for re-occupancy.

b. When the work area passes the re-occupancy test, all controls and seals established shall be removed.

3.09 DISPOSAL AND TRANSPORTATION OF ASBESTOS-CONTAMINATED WASTE:

- A. Storage of Containerized ACM: As the work progresses, remove sealed and labeled bags of ACM from the Work Area and place in a lockable trailer, dumpster, or other container approved for storage or transport of asbestos waste. The waste container shall be lined with two layers of 6-mil fire retardant plastic on all sides. Asbestos-containing waste shall remain under the positive control of the Asbestos Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access. Containerized ACM shall be removed from the site on a daily basis. Unless specifically approved in writing by the Owner, ACM shall not be permitted to be stored on site during non-working hours.
- B. Sealed and labeled bags or waste wrapped in two layers of plastic sheeting sealed airtight shall be used to transport asbestos-contaminated waste to the landfill. Procedures for hauling and disposal shall comply with 40 CFR, Part 61, 49 CFR, Part 171 and 172, and other applicable state, regional, and local government regulations. Procedures for removal from the Work Area and disposal of waste are outlined below:
- C. A properly completed and original "Waste Shipment Record" form shall accompany asbestos waste, which is transported to a disposal site. This form shall be signed and dated by each party who has control over the asbestos waste, and a copy retained by each party as responsibility for the waste is transferred to the next party. All original manifest forms and waste receipts shall be provided to the Architect. The Environmental Consultant shall be provided with copies of all waste manifests.
- D. Trucks hauling asbestos waste shall be totally enclosed to prevent loss or damage to waste container en-route to approved landfill. The interior of the vehicles shall be lined with two layers of 6-mil plastic.
- E. Mark with a visible warning sign during the loading and unloading of asbestos-containing waste all vehicles used to transport the waste material. Danger sign legend, text size, style and arrangement shall conform to the requirements of EPA Standard 40 CFR Part 61.149 (d) (I).

- F. Only sealed plastic bags or completely sealed items shall be deposited in landfill. Damaged, broken sealed windows or leaking plastic bags shall be resealed prior to being deposited in the landfill. Workers shall place asbestos waste in the landfill. Throwing or dumping of containers shall not be allowed. Workers unloading and handling the sealed bags/drums at the disposal site shall wear appropriate personnel protective equipment including respirators and protective clothing.
- G. After the vehicle is unloaded at the landfill, the plastic sheeting that was taped to the floor, sides and top of the truck shall be carefully removed and placed in properly labeled bags for disposal with the rest of the waste.

END OF SECTION

LIST OF SUBMITTALS

SUBMITTAL APPROVED	DATE SUBMITTED	DATE
Pre-Project Submittal:		
1. Insurance	_____	_____
2. All required bonds	_____	_____
3. List of Subcontractors	_____	_____
4. Health and Safety Plan	_____	_____
5. Proof that all required permits and variances have been obtained	_____	_____
6. Documentation of Required Qualifications of Workers	_____	_____
7. Proof of a respiratory protection program.	_____	_____
8. Proof of historic airborne fiber data.	_____	_____
9. Proof that a landfill site has been located.	_____	_____
10. SDS of chemicals to be used on this project.	_____	_____
11. Asbestos Removal and Disposal Work Plan	_____	_____
During Work Submittal:		
1. Schedule of Work Changes	_____	_____
2. Notarized copy of weekly payroll showing a prevailing wage rate has been paid.	_____	_____
A "Request For Services" form.	_____	_____
3. Results of all air monitoring performed by the Contractor (OSHA)	_____	_____

HAZMAT ABATEMENT WORK PLAN

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Demolition and removal of selected portions of building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Salvage of existing items to be reused or recycled.

1.3 DEFINITIONS

- A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.
- B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse.
- C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.
- D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, demolition waste becomes property of Contractor.
- B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.
 - 1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

- A. Predemolition Conference: Conduct conference at Project site.
 - 1. Inspect and discuss condition of construction to be selectively demolished.
 - 2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress.

3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.

1.6 SUBMITTALS, GENERAL

- A. General: Submit all informational submittals required by this Section concurrently.

1.7 INFORMATIONAL SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.

- B. Predemolition Inventory:

1. Submit list of items to be removed and salvaged as part of selective demolition work.
2. Submit list of items to be removed and reinstalled as part of selective demolition work.

- C. Predemolition Photographs or Video: Show existing conditions, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Submit photos or video recordings on thumb drive before Work begins. Include copy of key plan indicating each photograph's or video's location and direction.

1. Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modification.
2. Photographs: Provide high-resolution color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels.
 - a. Name each image with date photograph was taken, location, and unique sequential number keyed to accompanying key plan in file name.
3. Video: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels.
 - a. Name each video recording with date video recording was recorded, location, and unique sequential number keyed to accompanying key plan in file name.
 - b. Begin narration of each video recording with Contractor's name, videographer's name, and location in Project.
 - 1) Describe scenes on video recording by audio narration.
 - 2) Confirm date and time at beginning and end of recording.

1.8 CLOSEOUT SUBMITTALS

A. Inventory

1. Submit a list of items that have been removed and salvaged.
2. Submit a list of items that have been removed and reinstalled.

B. Warranties: Documentation indicating that existing warranties are still in effect after completion of selective demolition.

1.9 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Hazardous Materials: Present in buildings and structures to be selectively demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.

1. Hazardous material remediation is specified elsewhere in the Contract Documents.
2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.

E. Storage or sale of removed items or materials on-site is not permitted.

F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.10 WARRANTY

A. Existing Warranties: Remove, replace, patch, and restore materials and surfaces cut or damaged during selective demolition, by methods and with materials and using approved contractors so as not to void existing warranties. Notify warrantor before proceeding. Existing warranties include the following:

1. Roofing.

B. Notify warrantor on completion of selective demolition, and obtain documentation verifying that existing system has been inspected and warranty remains in effect. Submit documentation at Project closeout.

1.11 COORDINATION

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

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI/ASSP A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- B. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.
- C. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective building demolition operations.
 - 1. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.
- D. Verify that hazardous materials have been remediated before proceeding with building demolition operations.
- E. Record existing conditions by use of preconstruction photographs or video.
 - 1. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by demolition operations.
 - 2. Inventory and record the condition of items to be removed and reinstalled. Provide photographs or video of conditions that might be misconstrued as damage caused by demolition operations.
- F. Beginning selective demolition constitutes Contractor's acceptance of conditions.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.
- B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.
 - 1. Arrange to shut off utilities with utility companies.
 - 2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
 - 3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
 - a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
 - b. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material and leave in place.
 - c. Equipment to Be Removed: Disconnect and cap services and remove equipment.
 - d. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
 - e. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
 - f. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.
 - g. Ducts to Be Abandoned in Place: Cap or plug ducts with same or compatible ductwork material and leave in place.

3.3 PROTECTION

- A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 - 1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
 - 2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.

3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
 4. Cover and protect furniture, furnishings, and equipment that have not been removed.
 5. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Division 01 Section "Temporary Facilities and Controls."
- B. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
1. Strengthen or add new supports when required during progress of selective demolition.
- C. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
 5. Maintain adequate ventilation when using cutting torches.
 6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
 7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.

8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 9. Dispose of demolished items and materials promptly.
- B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- C. Removed and Salvaged Items:
1. Clean salvaged items.
 2. Pack or crate items after cleaning. Identify contents of containers.
 3. Store items in a secure area until delivery to Owner.
 4. Transport items to Owner's storage area designated by Owner.
 5. Protect items from damage during transport and storage.
- D. Removed and Reinstalled Items:
1. Clean and restore items to functional condition adequate for intended reuse.
 2. Pack or crate items after cleaning and restoring. Identify contents of containers.
 3. Protect items from damage during transport and storage.
 4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- E. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

- A. Concrete: Demolish in sections. Cut concrete full depth at junctures with construction to remain and at regular intervals using power-driven saw, and then remove concrete between saw cuts.
- B. Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain, using power-driven saw, and then remove masonry between saw cuts.
- C. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.
- D. Resilient Floor Coverings: Remove floor coverings and adhesive according to recommendations in RFCI's "Recommended Work Practices for Removal of Resilient Floor Coverings."

- E. Roofing: Remove no more existing roofing than what can be covered in one day by new roofing and so that building interior remains watertight and weathertight. See Division 07 Sections for new roofing requirements.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction.
 - 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.
 - 3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
- B. Burning: Do not burn demolished materials.

3.7 CLEANING

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

END OF SECTION 02 41 19

SECTION 02 84 00

PCB CAULK/SEALANT REMOVAL AND DISPOSAL

PART 1 – GENERAL

1.1 SUMMARY

- A. This Section specifies requirements for removal and disposal of Polychlorinated Biphenyl (PCB) containing and contaminated waste from district owned and/or operated facilities in the States of New York as follows:

1. Manage all waste determining if it has any or all of the following: PCB hazardous waste, ACM waste, Toxicity Characteristic (e.g. lead containing) hazardous waste, PCB Bulk Product Waste or PCB Remediation waste. Wastes shall not be recycled.
2. It shall be incumbent upon the PCB Remediation Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents.
3. Remove PCB Caulk/sealant as specified herein are listed below:
 - Door Caulking located on the corridor side
(230 ppm) – 187 LF (11 doors @ 17 lf each)
 - Science Classrooms 113 (not to be affected by current scope), 100, 103, 205, 207
 - Library (2 doors), SEED office (room 306B), A/V room 306
 - Family Consumer and Science Rooms 338 & 339.

The quantities presented on Hazmat Identification Plans are provided to establish an order of magnitude of the remediation project. Actual quantities may vary. The PCB Remediation Contractor is responsible for the verification of all quantities scheduled for removal. This verification shall include an on-site walk-through inspection of the building. The materials/quantities listed are estimates and no change orders will be accepted.

4. Transport and dispose PCB containing materials and contaminated waste as specified in Section 3.05 herein.

1.2 REFERENCES

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only. Where a conflict or overlap among regulations and/or these specifications exist, the most stringent requirements shall apply.

1. American National Standards Institute (ANSI)

1. ANSI.Z89.1 Personnel Protective Equipment - Protective Headwear for Industrial Worker's Requirements (Latest Revision)
2. ANSI.Z87
2. Code of Federal Regulations (CFR)
 1. 29 CFR Subpart D- Walking, Working Surfaces
 2. 29 CFR 1910.120 - Hazardous Waste Operations and Emergency Response (HAZWOPER).
 3. 29 CFR 1910.134 - Respiratory Protection Standard
 4. 29 CFR 1910.146 - Permit-Required Confined Spaces
 5. 29 CFR 1910.1000 — Air Contaminants (Table Z-1)
 6. 29 CFR 1910.1200 - Hazard Communication
 7. 29 CFR 1926.20 - General Health and Safety Provisions
 8. 29 CFR 1926.57 – Ventilation
3. 29 CFR 1926.59 - Hazard Communication Program
4. 29 CFR 1926.62 - Lead Exposure in Construction
29 CFR 1926.95 - Criteria for Personal Protective Equipment
5. 29 CFR 1926, Subpart H - Materials Handling, Storage, Use and Disposal

29 CFR 1926, Subpart L - Scaffolding
29 CFR 1926, Subpart M -Fall Protection
29 CFR 1926, Subpart X – Ladders
6. 29 CFR 1926, Subpart Z - Toxic and Hazardous Substances

40 CFR 50.6 - National Primary and Secondary Ambient Air Quality Standards for Particulate Matter
40 CFR 260 - Hazardous Waste Management System: General
40 CFR 261 - Identification and Listing of Hazardous Waste
40 CFR 262 - Standards Applicable to Generators of Hazardous Waste
40 CFR 263 - Standards Applicable to Transporters of Hazardous Waste
7. 40 CFR 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

40 CFR 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
8. 40 CFR 268 - Land Disposal Restrictions
40 CFR 700 - Toxic Substances Control Act (TSCA)
9. 40 CFR 761- PCBs Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
10. 49 CFR 105 - Hazardous Materials Program Definitions and General Procedures
11. 49 CFR 171 - General Information, Regulations and Definitions

12. 49 CFR 172 - Hazardous Material Table, Special Provisions,
13. Hazardous Materials Communications, Emergency Response Information, and Training Requirements
14. 49 CFR 173 - Shippers-General Requirements for Shipments and Packaging
15. 49 CFR 177 - Carriage by Public Highway
16. 49 CFR 176 - Specifications for Packaging
17. National Institute for Occupational Safety and Health (NIOSH)

Publication Number 87-106 Respiratory Decision Logic
NIOSH /OSHA Booklet 3142 Lead in Construction
Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (NIOSH Publication 85-115)
18. U.S. Environmental Protection Agency (US EPA), Toxic Substances Control Act (TSCA)

Polychlorinated Biphenyl (PCB) Site Revitalization Guidance Under the Toxic Substances Control Act
40 CFR Part 761.50 - Applicability (b) (1-8)
40 CFR Part 761.61 - PCB Remediation Waste
40 CFR Part 761.62 - PCB Bulk Product Waste
40 CFR Part 761.79 – Decontamination
19. Center for Disease Control (CDC): Air Pollution and Respiratory Health.

1.3 EXAMINATION OF THE SITE

- A. It is understood that the PCB Remediation Contractor has examined the Site and made his/her own estimates of the facilities and difficulties attending the execution of the Work, and has based his price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the PCB Remediation Contractor shall make no claim for additional cost due to the existing conditions at the Site.

1.4 HEALTH AND SAFETY

- A. Toxic Effects: The Contractor shall assume all responsibility for any toxic effects to workers from the dusts, vapors or residues generated in their work, including the use of any substances or equipment used by the Contractor during construction.
- B. Chemical/Biological Hazards: The known chemical/ biological hazards on site include PCB-containing material and debris. The Contractor shall provide materials, equipment and training to its workers to ensure their protection from these and any other chemical/biological hazards which may be identified during the course of this work.

- C. Physical Hazards: The Contractor shall provide safety equipment and training to his workers to ensure their protection from any physical hazards including but not limited to trip/fall hazards, working at elevation, heat stress, contact with energized (hot) active equipment, noise, overhead bump hazards, and electrical shock that may be present during the Work.
- D. Safety Act: The Williams-Steiger Occupational and Safety Health Act (OSHA) of 1970, as amended, shall be strictly complied with during the course of this project. This Act shall govern the conduct of the Contractor's workmen, tradesmen, materialmen, and subcontractors, and of visitors to the project site.
- E. Accident Prevention: In order to protect the lives and health of his employees, the Contractor shall comply with all pertinent provisions of the latest edition of the "Manual of Accident Prevention in Construction" issued by the Associated General Contractors of America, Inc. and shall maintain an accurate record of all accidents which occur during the project. An injury or loss of life must be immediately reported by the Contractor to the Owner, and a copy of the Contractor's report to his insurer of an accident must be provided to the Owner.
- F. Emergency Response: The Contractor shall establish an Emergency Response Team made up of members of his work force. Team members shall be trained, organized, and capable of responding in the event of an accident, fire, or other emergency. The Contractor shall designate a site Safety Coordinator to train team members regarding the location and use of site-specific fire/life safety equipment. As a minimum requirement, members of the Emergency Response Team shall be knowledgeable in standard first aid and CPR techniques, fire extinguisher use, and evacuation procedures.
- G. Workmen Protection: The Contractor shall provide and maintain all safety measures necessary to properly protect workmen.
- H. Emergency Actions: In an emergency affecting the safety of life, the work, or adjoining property, the Contractor, to prevent such threatened loss or injury without special instruction or authorization from the Owner or the Engineer, is hereby permitted to act at his discretion.
- B. Hazard Communication Act: The Contractor shall comply with the Hazard Communication Standard promulgated by the Occupational Safety and Health Administration (OSHA No. 29 CFR 1910.1200). This program ensures that all employers provide the information they need to inform and train employees properly and to design and put in place employee protection program. It also provides necessary hazard information to employees so they can participate in, and support, the protective measures needed at their work place. The contractor shall ensure that labels or other forms of warning are legible in English. Employer having employees who speak other languages may add the information in their languages. See OSHA 29 CFR 1910.1200 for more details.

1.5 WORK SUPERVISION AND COORDINATION

- A. Contractor's PCB Management Supervisor: From the start of work through to the project completion, the Contractor shall have on-site a responsible and competent

supervisor. The Supervisor shall be on site during all working hours. When the Supervisor must leave site during work, a temporary Supervisor shall be appointed.

1.6 CONTRACTOR QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in PCB remediation projects, specifically including removal of PCB-containing materials listing no less than three (3) completed jobs in the past year, with all projects being of similar size and scope. The PCB Remediation Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:

20. Project Name and Address
21. Owner's Name and Address
22. Architect/Consultant
23. Contract Amount
24. Date of Completion
25. Extras and Changes

- B. Submit a written statement regarding whether the PCB Remediation Contractor has ever been found out-of-compliance with federal or state regulations pertaining to worker protection, removal, transport, or disposal.

1.7 GENERAL REQUIREMENTS

- A. The PCB Remediation Contractor shall furnish all labor, materials, facilities, equipment, installation services, employee training, notifications, permits, licenses, certifications, agreements and incidentals necessary to perform the specified work. Work shall be performed in accordance with the contract documents, the latest regulations from the Occupational Safety and Health Administration (OSHA), the United States Environmental Protection Agency (US EPA), and all other applicable federal, state and local agencies. Whenever the requirements of the above references conflict or overlap, the more stringent provision shall apply.
- B. All project personnel engaged in the work covered under this section shall be trained in accordance with OSHA Regulations 29 CFR 1910.1000 and 29 CFR 1910.1200. It should also be noted that work associated with PCB removal may also involve exposure to PCBs during demolition and removal activities specified herein and the PCB Remediation Contractor shall perform required exposure assessment for PCBs.
- C. The PCB Remediation Contractor shall provide a Project Health and Safety Officer having a minimum of eight (8) hours of supervisor training in hazardous waste site operations in accordance with the requirements of 29 CFR 1910.1200. The supervisor must be on site at all times during remediation work. This supervisor and other contractor representatives must attend a pre-remediation meeting to be scheduled by the building owner/owners representative.
- D. This section specifies the procedures for removal of existing materials containing polychlorinated biphenyls (PCB), equal to or greater than (>)50 parts per million (ppm), in the form of:

- The contractor must protect all ground/other surfaces from possible contamination. All ground surfaces must be protected with plywood and a layer of 10-mil reinforced polyethylene sheeting. The contractor will pay for all contamination/remediation/ abatement of interior and exterior surfaces, including ground surfaces if the Owner deems they have contaminated these surfaces.
 - The contractor must dispose of Remediation Waste (segregated adjacent materials, materials from remediation - suits, polyethylene sheeting, towels/rags, respirator cartridges, etc.) in addition to the Bulk Product Waste.
- E. Disturbance or removal of polychlorinated biphenyls (PCB) containing materials may cause a health hazard to workers and building occupants. The PCB Remediation Contractor shall disclose to all of his workers, supervisory personnel, subcontractors and consultants who will be at job site of the seriousness of the hazard and of proper work procedures which must be followed.
- F. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants may encounter, disturb or otherwise function in the immediate vicinity of polychlorinated biphenyls (PCB) containing materials, appropriate, continuous measures as necessary to protect all workers from the hazard of exposure shall be taken. Such measures shall include the procedures and methods described herein, regulations of the OSHA, US EPA, and local requirements as applicable.
- G. The PCB Remediation Contractor shall employ a Competent Person (Supervisor) with at least three (3) years' experience on projects of similar scope and magnitude who shall be responsible for all work involving PCB remediation as described in the specifications and defined in applicable regulations, and have full time daily supervision of the same. The Supervisor shall be the Competent Person as defined by OSHA regulations and have experience in the proper removal and disposal of PCB-Containing Materials.
- H. The PCB Remediation Contractor shall allow the work of this contract to be inspected, if required, by local, state, federal, and any other authorities having jurisdiction over such work. The PCB Remediation Contractor shall immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.
- I. The PCB Remediation Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The PCB Remediation Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- J. The PCB Remediation Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

- K. The PCB Remediation Contractor shall provide enough labor to guarantee completion of the work within the time frame given and within the normal operating hours of the buildings.
- L. Note the work in this section is subject to TSCA regulation 40 CFR 761 for materials containing >50/1 ppm (PCB-Containing Materials). The Contractor is responsible for notifying applicable regulatory agencies of the work to be performed.
- M. The general/remediation contractors shall only use heavy equipment operators that have proper hazwoper training when disturbing/removing/moving and packing PCB containing materials. 40 hour hazwoper training and annual refresher training is required for operators handling PCB containing/contaminated materials. All operators must also have current medicals, fit test data and wear respirators during work. Respirator usage can be suspended if personal air sampling shows appropriate air concentrations complying with OSHA.

1.8 DEFINITIONS

- A. The following definitions as used within this technical specification as well as references to specific sections of the Code of Federal Regulation section 40 CFR Part 761 are provided. Definitions are extracted in part from 40 CFR Part 761.3, for full definitions refer to the specified section of regulations.
 - 1. CERCLA means the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601-9657).
 - 2. Chemical waste landfill means a landfill at which protection against risk of injury to health or the environment from migration of PCBs to land, water, or the atmosphere is provided from PCBs and PCB Items deposited therein by locating, engineering, and operating the landfill as specified in §761.75.
 - 3. Cleanup Site means the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of a cleanup of PCB remediation waste, regardless of whether the site was intended for management of waste.
 - 4. Containment means the enclosure within the building which establishes a contaminated area and surrounds the location where PCB and/or other toxic or hazardous substance removal is taking place and establishes a Control Work Area.
 - 5. Designated Facility means the off-site disposer or commercial storer of PCB waste designated on the manifest as the facility that will receive a manifested shipment of PCB waste.
 - 6. Disposal means intentionally or accidentally to discard, throw away, or otherwise complete or terminate the useful life of PCBs and PCB Items. Disposal includes spills, leaks, and other uncontrolled discharges of PCBs

as well as actions related to containing, transporting, destroying, degrading, decontaminating, or confining PCBs and PCB Items.

7. DOT means the United States Department of Transportation.
8. EPA identification number means the 12-digit number assigned to a facility by EPA upon notification of PCB waste activity under §761.205.
9. Excluded PCB products means PCB materials which appear at concentrations less than 50 ppm as defined in 40 CFR §761.3.
10. Fixed Object means mechanical equipment, electrical equipment, fire detection systems, alarms, and all other fixed equipment, fixtures or other items which cannot be removed from the work area.
11. Generator of PCB waste means any person whose act or process produces PCBs that are regulated for disposal under subpart D of 40 CFR Part 761, or whose act first causes PCBs or PCB Items to become subject to the disposal requirements of subpart D, or who has physical control over the PCBs when a decision is made that the use of the PCBs has been terminated and therefore is subject to the disposal requirements of subpart D. Unless another provision of 40 CFR Part 761 specifically requires a site-specific meaning, "generator of PCB waste" includes all of the sites of PCB waste generation owned or operated by the person who generates PCB waste.
12. HEPA means High Efficiency Particulate Air filtration efficiency of 99.97 percent down to 0.3 microns. Filtration provided on specialized vacuums and air filtration devices to trap particles.
13. High occupancy area means any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: 840 hours or more (an average of 16.8 hours or more per week) for non-porous surfaces and 335 hours or more (an average of 6.7 hours or more per week) for bulk PCB remediation waste. Examples could include a residence, school, day care center, sleeping quarters, a single or multiple occupancy 40 hours per week work station, a school class room, a cafeteria in an industrial facility, a control room, and a work station at an assembly line.
14. Incinerator means an engineered device using controlled flame combustion to thermally degrade PCBs and PCB Items. Examples of devices used for incineration include rotary kilns, liquid injection incinerators, cement kilns, and high temperature boilers.
15. Laboratory means a facility that analyzes samples for PCBs and is unaffiliated with any entity whose activities involve PCBs.

16. Liquid PCBs means a homogenous flowable material containing PCBs and no more than 0.5 percent by weight non-dissolved material.
17. Low occupancy area means any area where PCB remediation waste has been disposed of on-site and where occupancy for any individual not wearing dermal and respiratory protection for a calendar year is: less than 840 hours (an average of 16.8 hours per week) for non-porous surfaces and less than 335 hours (an average of 6.7 hours per week) for bulk PCB remediation waste. Examples could include an electrical substation or a location in an industrial facility where a worker spends small amounts of time per week (such as an unoccupied area outside a building, an electrical equipment vault, or in the non-office space in a warehouse where occupancy is transitory).
18. Manifest means the shipping document EPA form 8700-22 and any continuation sheet attached to EPA form 8700-22, originated and signed by the generator of PCB waste in accordance with the instructions included with the form and subpart K of this part.
19. Mark means the descriptive name, instructions, cautions, or other information applied to PCBs and PCB Items, or other objects subject to these regulations.
20. Marked means the marking of PCB Items and PCB storage areas and transport vehicles by means of applying a legible mark by painting, fixation of an adhesive label, or by any other method that meets the requirements of these regulations.
21. Municipal solid wastes means garbage, refuse, sludges, wastes, and other discarded materials resulting from residential and non-industrial operations and activities, such as household activities, office functions, and commercial housekeeping wastes.
22. Non-liquid PCBs means materials containing PCBs that by visual inspection do not flow at room temperature (25°C or 77°F) or from which no liquid passes when a 100 g or 100 ml representative sample is placed in a mesh number 60 $\pm$ 5 percent paint filter and allowed to drain at room temperature for 5 minutes.
23. Non-porous surface means a smooth, unpainted solid surface that limits penetration of liquid containing PCBs beyond the immediate surface. Examples are: smooth un-corroded metal; natural gas pipe with a thin porous coating originally applied to inhibit corrosion; smooth glass; smooth glazed ceramics; impermeable polished building stone such as marble or granite; and high density plastics, such as polycarbonates and melamines that do not absorb organic solvents.
24. On site means within the boundaries of a contiguous property unit.

25. PCB and PCBs means any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contains such substance. Refer to §761.1(b) for applicable concentrations of PCBs. PCB and PCBs as contained in PCB items are defined in §761.3. For any purposes under this part, inadvertently generated non-Aroclor PCBs are defined as the total PCBs calculated following division of the quantity of mono-chlorinated biphenyls by 50 and di-chlorinated biphenyls by 5.
26. PCB Article means any manufactured article, other than a PCB Container, that contains PCBs and whose surface(s) has been in direct contact with PCBs. "PCB Article" includes capacitors, transformers, electric motors, pumps, pipes and any other manufactured item (1) which is formed to a specific shape or design during manufacture, (2) which has end use function(s) dependent in whole or in part upon its shape or design during end use, and (3) which has either no change of chemical composition during its end use or only those changes of composition which have no commercial purpose separate from that of the PCB Article.
27. PCB Article Container means any package, can, bottle, bag, barrel, drum, tank, or other device used to contain PCB Articles or PCB Equipment, and whose surface(s) has not been in direct contact with PCBs.
28. PCB Bulk Product Waste means waste derived from manufactured products containing PCBs in a non-liquid state, at any concentration where the concentration at the time of designation for disposal is >50 ppm PCBs. PCB bulk product waste does not include PCBs or PCB Items regulated for disposal under §761.60(a) through (c), §761.61, §761.63, or §761.64. PCB bulk product waste is further defined in 40 CFR §761.3. Note in accordance with October 2012 re-interpretation from the U.S. Environmental Protection Agency (EPA), adjacent porous materials in contact with PCB Bulk Products shall be considered PCB Bulk Product Material for disposal purposes.
29. PCB Capacitor means any capacitor that contains >500 ppm PCB. Concentration assumptions applicable to capacitors appear under §761.2.
30. PCB Container means any package, can, bottle, bag, barrel, drum, tank, or other device that contains PCBs or PCB Articles and whose surface(s) has been in direct contact with PCBs.
31. PCB-Contaminated means a non-liquid material containing PCBs at concentrations >50 ppm but < 500 ppm; a liquid material containing PCBs at concentrations >50 ppm but < 500 ppm or where insufficient liquid material is available for analysis, a non-porous surface having a surface concentration >10 pg/100 cm² but < 100 pg/100 cm² , measured by a standard wipe test as defined in §761.123.
32. PCB Equipment means any manufactured item, other than a PCB Container or a PCB Article Container, which contains a PCB Article or other PCB

Equipment, and includes microwave ovens, electronic equipment, and fluorescent light ballasts and fixtures.

33. PCB Item means any PCB Article, PCB Article Container, PCB Container, PCB Equipment, or anything that deliberately or unintentionally contains or has as a part of it any PCB or PCBs.
34. PCB Remediation Waste means waste containing PCBs as a result of a spill, release, or other unauthorized disposal, at the following concentrations: Materials disposed of prior to April 18, 1978, that are currently at concentrations >50 ppm PCBs, regardless of the concentration of the original spill; materials which are currently at any volume or concentration where the original source was >500 ppm PCBs beginning on April 18, 1978, or >50 ppm PCBs beginning on July 2, 1979; and materials which are currently at any concentration if the PCBs are spilled or released from a source not authorized for use under this part. PCB remediation waste means soil, rags, and other debris generated as a result of any PCB spill cleanup, as further defined in 40 CFR §761.3.
35. PCB waste(s) means those PCBs and PCB Items that are subject to the disposal requirements of subpart D in 40 CFR Part 761.
36. Porous surface means any surface that allows PCBs to penetrate or pass into itself including, but not limited to, paint or coating on metal; corroded metal; fibrous glass or glass wool; unglazed ceramics; ceramics with a porous glaze; porous building stone such as sandstone, travertine, limestone, or coral rock; low-density plastics such as Styrofoam and low-density polyethylene; coated (varnished or painted) or uncoated wood; concrete or cement; plaster; plasterboard; wallboard; rubber; fiberboard; chipboard; asphalt; or tar paper. For purposes of cleaning and disposing of PCB remediation waste, porous surfaces have different requirements than nonporous surfaces.
37. RCRA means the Resource Conservation and Recovery Act (40 U.S.C. 6901 et seq.).
38. Standard wipe sample means a sample collected for chemical extraction and analysis using the standard wipe test as defined in §761.123. Except as designated elsewhere in part 761, the minimum surface area to be sampled shall be 100 cm².
39. Storage for disposal means temporary storage of PCBs that have been designated for disposal.
40. SW-846 means the document having the title "SW-846, Test Methods for Evaluating Solid Waste,"
41. Totally enclosed manner means any manner that will ensure no exposure of human beings or the environment to any concentration of PCBs.

42. Transfer facility means any transportation-related facility including loading docks, parking areas, and other similar areas where shipments of PCB waste are held during the normal course of transportation. Transport vehicles are not transfer facilities under this definition, unless they are used for the storage of PCB waste, rather than for actual transport activities. Storage areas for PCB waste at transfer facilities are subject to the storage facility standards of §761.65, but such storage areas are exempt from the approval requirements of §761.65(d) and the recordkeeping requirements of §761.180, unless the same PCB waste is stored there for a period of more than 10 consecutive days between destinations.
43. Transporter of PCB waste means, for the purposes of subpart K of 40 CFR Part 761, any person engaged in the transportation of regulated PCB waste by air, rail, highway, or water for purposes other than consolidation by a generator.
44. Transport vehicle means a motor vehicle or rail car used for the transportation of cargo by any mode. Each cargo-carrying body (e.g., trailer, railroad freight car) is a separate transport vehicle.
45. TSCA means the Toxic Substances Control Act (15 U.S.C. 2601 et seq.).

1.9 SUBMITTALS

- i) See Appendix "A" for submittal requirements.

1.10 REGULATIONS AND STANDARDS

- A. The PCB Remediation Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to PCB Containing Material removal. Specifically, The PCB Remediation Contractor shall comply with the requirements of the following as applicable to the work to be performed:
 1. Toxic Substance Control Act (TSCA) (40 CFR Part 761).
 2. Comprehensive Environmental Response, Compensation, and Liability Act (Superfund Law).
 3. Department of Transportation (DOT) regulations - DOT regulation HM-181 regulates transportation of hazardous materials, including PCBs.
 4. Occupational Safety and Health Administration (OSHA) - OSHA regulates workers' safety and exposure to a variety of chemicals including PCBs.
 5. Life Safety Code (NFPA); and
 6. Local health and safety codes, ordinances or regulations pertaining to hazardous materials remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

PART 2 – MATERIALS, TOOLS, AND EQUIPMENT & PERSONNEL PROTECTION

2.1 EQUIPMENT

- A. General: Equipment provided under this section shall conform to applicable federal and state regulations, local codes, and the requirements specified herein.
- B. Spraying Equipment: Equipment used to apply amended water shall be of a low-pressure type to prevent disturbance of the caulk prior to physical controlled removal.
- C. Vehicles: Trucks or Vans used for the transportation of waste shall be enclosed and suitable for loading, temporary storage, transit, and unloading of waste without exposure to persons or property.
- D. Fall Protection Equipment: Certified and approved equipment to be used by trained personnel when working at elevation to protect against falling from an elevated work area.
- E. Fire Extinguisher: Type "ABC" dry chemical extinguisher or a combination of several extinguisher of NFPA recommended types for the fire hazard exposures in each extinguisher location shall be provided. Minimum size of extinguisher shall be 4-A, and 40-B:C. Supply a minimum of one extinguisher for every 1,000 square feet of floor area, with a maximum travel distance to an extinguisher of 75-feet. Supply at least one extinguisher in any decontamination and work area.
- F. Water Treatment System: A system capable of treating and retaining PCBs shall be provided if required by Articles 3.04 to 3.06 or otherwise proposed by the Contractor.
- G. Carts: Provide watertight wheeled carts with tight fitting lids suitable for movement of non-contaminated waste or bagged waste from the work area to the waste storage container or transport vehicle.
- H. Power Tools: Provide power tools necessary to complete the Work. Article 3.04 prohibits the use of power tools used directly for caulk removal unless information on proposed tool model and design is submitted in advance for approval by the Owner and tools are equipped with a dust collection system including an attached shroud connected to a HEPA vacuum system for capture of dust.

2.2 WORKER PROTECTIVE CLOTHING AND EQUIPMENT

- A. General: Protective clothing and equipment shall protect the workers and prevent dust migration as determined in the Health and Safety Plan.
- B. Protective Clothing: Workers shall be provided with sufficient sets of properly fitting protective clothing and equipment.
 - 1. The Contractor shall provide authorized visitors including the Owner's Environmental Consultant suitable properly fitting protective disposable clothing and equipment (up to four sets per 8-hour shift) whenever they are required to enter the work area.

- C. Equipment: Eye protection and hard hats required for job conditions or by applicable safety regulations shall be provided.
- D. Respiratory Protection: The Contractor shall be solely responsible for providing adequate respiratory protection at all times for all individuals, if and whenever the Contractor's Health and Safety Plan calls for such protection. Types of respirators used shall be approved by MSHA/NIOSH in accordance with OSHA Standard 29 CFR 1910.134. The Contractor shall provide workers with individually issued and marked respiratory equipment suitable for the exposure level(s) in the work area(s), as specified in OSHA Standard 29 CFR 1910.1000 and any other applicable standards. Where respirators with disposable filter parts are employed, the Contractor shall provide sufficient filter parts for replacement as necessary or as required by the applicable regulation.

PART 3 - EXECUTION

3.1 PRECAUTIONS AGAINST PCB CAULKING CONTAMINATION

A. General

1. Provide precautions against PCB contamination when caulking materials are disturbed or removed. Provide all necessary precautions for all construction personnel to prevent PCB exposure and/or environmental contamination.
2. Personnel performing the work must receive OSHA awareness training and training on work practices related to PCB disturbances and handling. Training on work practices will include, but not be limited to, hazards, hazard control procedures the prohibition on mechanical saw cutting or grinding of caulking material, removal using only manual hand implements (e.g., knife cutting) and wet scraping, caulk removal prior to cutting building components, dust control measures, waste labeling/ management, security, cleanup and other SCA and regulatory required work practices. Personnel managing New York State hazardous waste containing greater than 50 ppm of PCBs shall be trained in hazardous waste management.
3. The Contractor shall consider potential PCB hazards and prepare a PCB Management Plan and a Health and Safety. PCBs shall be handled such that no skin contact or release to the building or the environment occurs. Proper handling, storage and disposal of PCB-containing waste shall be performed by the Contractor in accordance with all applicable regulations, including, but not limited to 40 CFR 761, 6 NYCRR 371 and 6 NYCRR 373.
4. The Contractor shall prepare a PCB remediation self-implementation plan and submit it to EPA for review and approval.

B. Dust Control

1. Exterior of Building
 - a. Prior to beginning any exterior caulk or window removal, 6-mil fire-retardant poly protection shall be placed on all grade areas including under scaffolding to collect dust and debris that may contain caulking. Such protection shall also be placed on roofs and on top of side walk bridges in the vicinity of the work area. Plastic shall be extended from the building to a distance of 15 feet from the building and at least 15 feet laterally beyond on each side of the work. Joints must be taped or otherwise secured to maintain coverage of the required areas and prevent plastic from the effects of wind or rain.
 - b. Access to the lined area will be restricted by posting temporary barriers and signs which read "WARNING: Authorized Personnel Only" along with any other required signs (e.g., for ACM/Lead).
 - c. Waste shall be removed from the plastic sheeting at the end of each shift, at a minimum, and before any high wind conditions occur.

C. Cleaning

1. Daily cleaning shall be performed in accordance with this Specification Section. However, during removal of caulking or renovation/demolition of material that may have caulking attached, the following procedure is to be followed when the construction task is completed and at the end of each work day to prevent contamination during the renovation/demolition process.
 - a. The cleaning process shall consist of vacuuming (with a HEPA filter), wet wiping/mopping and a repeated vacuuming (with a HEPA filter) of the entire indoor work area. All surfaces in and around the work area must be free of dust generated during the work.
 - b. All dust, debris or waste associated with or generated by the removal and renovation/demolition of building material with caulk shall be removed from interior and exterior work areas. Final cleanup shall ensure that the area is left cleaner than original conditions found and no trace of the renovation/demolition activity is to be left behind.
 - c. Clean all tools and equipment before removal from the work area by HEPA vacuuming and wet wiping.
 - d. Cleanup shall begin at the far end of the work area and move towards the entrance to the work area, vacuuming floors last.
2. During removal of caulking or renovation/demolition of material that may have caulking attached, the following procedure is to be followed when the construction task is completed:
 - a. Complete all daily cleaning tasks.
 - b. All unwrapped vertical and horizontal surfaces and lighting fixtures inside the barrier will be cleaned of dust and dirt.
 - c. HEPA vacuums will be emptied and the HEPA filter element replaced at the end of work at this school (and whenever else needed) inside the work area before final cleanup in a manner which minimizes the reentry of contaminants into the workplace. HEPA dust, debris and filter media from the work involving PCB-containing caulk will be containerized and managed as PCB waste.
 - e. Remove dust mats, construction paper, dust barriers and other protective sheeting by misting with water, detaching it, folding it dirty side inward, and either taping to seal it or sealing it in heavy-duty bags. Sheeting separating contaminated rooms from non-contaminated rooms must remain in place until after removing other sheeting. Dispose of as waste.
 - f. Clean interior walls starting at the ceiling and working down to the floor by either HEPA vacuuming or wiping with a damp cloth. Thoroughly HEPA vacuum all remaining surfaces and objects in the work area, including furniture and fixtures. The HEPA vacuum must be equipped with a beater bar when vacuuming carpets and rugs.

- g. Wipe all remaining surfaces and objects in interior work areas, except for carpeted or upholstered surfaces, with a damp cloth. Mop uncarpeted floors thoroughly, using a mopping method that keeps the wash water separate from the rinse water, such as the 2-bucket mopping method or wet mopping system (i.e., mop head designed to be used with disposable absorbent cleaning pads, a reservoir for cleaning solution, and a built-in mechanism for distributing cleaning solution onto a floor, or a method of equivalent efficacy).
- h. Visually inspect the area for any remaining dust or debris. Vacuum (with HEPA filter) and wet wipe until space is clean.

3.2 MAINTENANCE OF DUST CONTROLS

- A. Ensure that dust barriers and plastic linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon their discovery. Visually inspect dust controls at the beginning and end of each work period.
- B. Visually inspect non-work areas for dust leakage. Check the floor below, ceiling and walls, and view beneath/or around the dust controls, for signs of leakage. Perform the visual inspection a minimum of twice each 8-hour work shift.

3.3 REMOVAL OF PCB-CONTAINING CAULKING/GLAZING PUTTY

A. All Caulk Removal

- 1. Removal of building components shall be performed in accordance with the following procedures after all precautions and indoor and outdoor dust controls are in place.
 - a. Effective dust control must be maintained in any wind and weather conditions. Exterior windows, doors and caulk shall not be removed when the National Weather Service forecasts winds in excess of 15 miles per hour and ground plastic shall be rolled up and secured to prevent the spread of debris and dust to the building and the environment.
 - b. All PCB containing caulking removal from the building, windows, doors and other surfaces within the scope of work shall be by wet manual tool removal methods in the work area set up with dust controls. Caulking to be removed shall be misted with amended water, scored with a razor/knife at the point of contact with the building or component, and manually extracted with a pick and/or other manual tools. Mechanical cutting or grinding of caulking material is not permitted.
 - c. Remove all accessible caulk from any building components which require cutting or dismantling to facilitate removal (such as window frames) prior to such cutting or dismantling.
 - d. Segregate removed caulk which has been tested or is assumed to contain PCBs in excess of 50ppm from all other waste and debris

that does not contain greater than 50 ppm PCBs to minimize the quantity of New York State hazardous waste generated. Remove waste caulk from the work area on a regular basis and at the end of each work day.

- e. Visually inspect all building components and surfaces remaining in place on the building to ensure that all visible pieces of caulk have been removed. Any residual caulk will be misted with amended water and manually scraped until all visible caulk is removed from the building.

B. Waste Handling

- 1. All waste or debris shall be placed in covered or sealed containers to ensure that dust is not dispersed during transport. Separate caulking and collected HEPA dust/debris containing caulking from other renovation/demolition debris to minimize the amount of hazardous waste.
- 2. All wash water from caulk work shall be collected in appropriate containers and tested. If necessary to minimize the quantity of New York State hazardous waste, it shall be treated, collected and containerized and characterized to determine how it may be disposed. Waste water treatment solid wastes shall be placed in appropriate hazardous waste containers.

3. Wash Water from PCB-Containing Caulk Activities

The Contractor shall perform total PCB analysis to characterize all wash water in accordance with USEPA Publication SW-846 and 40 CFR 761 to confirm that is below the New York State hazardous waste threshold of 50 ppm and determine if it is below the PCB Decontamination Standard of 3 µg/L for discharge to a POTW (40 CFR 761.79(b)(1)(ii)). Copies of all waste characterization analytic results shall be forwarded to the Owner.

- a. Contractor shall containerize wash waters from all PCB-containing caulk removal, dust control and cleaning.
- b. The Contractor shall propose a sampling and homogenization procedure to obtain one or more composite samples representative of all containers for disposal.
- c. Contractor shall collect a composite sample of all containerized wash waters from PCB-containing caulk removal, dust control and cleaning. All sampling shall be performed the waste storage area. Waste water treatment solid wastes
- d. If wash waste water is below 50 ppm PCBs, the Contractor shall dispose of it as Non-Hazardous, PCB Remediation Waste. If wash water is 50 ppm or above, the Contractor shall treat it to concentrate the PCBs (e.g., in filter solids or activated carbon), collect a composite sample of all treated waters and confirm it is below the above thresholds for Non-Hazardous Waste disposal or discharge. Waste water treatment solid wastes may be tested and characterized

prior to proper disposal or assumed to be PCB Remediation Waste and New York State Hazardous Waste.

3.4 DISPOSAL OF WASTE WATER

A. Waste Water Discharge to Sewer

The Contractor may propose in the PCB Management Plan to discharge treated wash water to sewer after confirming that is below the PCB Decontamination Standard of 3 ug/L for discharge (40 CFR 761.79(b)(1)(ii)) and meeting the following provisions.

1. The Contractor shall not dispose of water used for dust control, to wash surfaces, wash the work area or water used to assist in the removal of PCB-containing caulk in the City sewer system without first obtaining a permit or determination that a permit is not required based on analysis for such disposal from the New York City Department of Environmental Protection (DEP). Until such a permit is obtained, all water shall be containerized.
2. The Contractor shall ensure that water is separated from solid waste and the method used for separation is clearly described in the DEP application.
3. The Contractor shall test the water for the parameters listed below. In addition, the Contractor may be asked by the DEP to test for other parameters not listed.
 - a. Total Petro-Hydrocarbons
 - b. pH
 - c. RCRA Metals
 - d. Cyanide
 - e. Flashpoint
 - f. Total Solids
 - g. Total PCBs
4. The permit application process is the responsibility of the Contractor, as well as the cost incurred by the water testing and analyses.

3.5 DISPOSAL OF PCB WASTE AND DEBRIS

A. Storage and Disposal

1. Package and label waste
 - a. PCB-Containing Drummed Caulk Waste, HEPA Dust and Wash Water Treatment Solid Wastes.
 - 1) Drummed waste shall be secured, labeled "Caution - Contains PCBs" and "Hazardous Waste" in accordance with the provisions of 40 CFR 761.45, 40 CFR 262.32 and 49 CFR 172.304, and stored in a designated secured storage space on site.
 - 2) As the work progresses, remove contained PCB-waste containers from the work area and place in a lockable trailer,

dumpster, or other shipping container meeting DOT requirements for transport of PCB-containing waste. The waste container shall be lined with two layers of fire retardant plastic. PCB-containing waste shall remain under the positive control of the Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access.

- B. Building Components and Debris from Removals Free of Visible PCB-Containing Caulking (or <50 ppm PCBs by Analysis). These paragraphs apply to material where caulk is removed so building material will not become hazardous waste.
 - 1) This material shall be stored in a manner that shall not allow entry of any residual traces of hazardous material into the environment. Leak-proof drums or portable bins, such as gondolas, are generally acceptable. The lids of the drums, or the covers of the bins, shall be firmly secured. The containers shall be kept out of flood plains or areas where run-off may occur. Weather resistant labels using indelible ink warning of the potential hazards associated with the material shall be placed on the containers. The containers shall be marked with the contents, tare weights of the containers, and the origin and date of collection of the material.
 - 2) Containers of materials to be disposed shall be labeled "Bulk PCB Remediation Wastes" in accordance with the applicable provisions of 40 CFR 761.45.
- c. Intact Building Components and Debris Where PCB-Containing Caulking was Not Removed
 - 1) This material shall be stored in a manner that shall not allow entry of any residual traces of hazardous material into the environment. Leak-proof drums or portable bins, such as gondolas, are generally acceptable. The lids of the drums, or the covers of the bins, shall be firmly secured. The containers shall be kept out of flood plains or areas where run-off may occur. Weather resistant labels using indelible ink warning of the potential hazards associated with the material shall be placed on the containers. The containers shall be marked with the contents, tare weights of the containers, and the origin and date of collection of the material.
 - 2) Containers of materials to be disposed known to have a combined concentration below 50 ppm PCBs shall be labeled "PCB Bulk Product Wastes" in accordance with the applicable provisions of 40 CFR 761.45. Containers of materials to be disposed known or believed to have a combined concentration of 50 ppm PCBs or above shall also be labeled "Hazardous Waste" in accordance with the

applicable provisions of 40 CFR 262.32 and 49 CFR 172.304.

- d. Drummed Wash Water
 - 1) Drummed Wash Water shall be secured, labeled "Wash Water" and stored in a designated secured storage space on site until test results appropriately categorize the waste water.
 - 2) Perform tests on waste water as per Article 3.04.D.
 - 3) Once the analytical results are received, if it will be disposed off-site, the container shall be labeled "Bulk PCB Remediation Wastes", in accordance with the provisions of 40 CFR 761.45. If known or believed to have a combined concentration of 50 ppm PCBs or above, it shall also be labeled "Hazardous Waste" in accordance with the applicable provisions of 40 CFR 262.32 and 49 CFR 172.304.
 - 4) As the work progresses, containers shall remain under the positive control of the Contractor and must never be left unattended in an area or on a vehicle where unauthorized persons could gain access.
- e. All waste shall be disposed of in accordance with all applicable local, Federal, State and county Regulations. Where required to be characterized, all laboratory analysis shall be conducted in an expeditious manner, with results not to exceed 48 hours turnaround.
- f. Based on waste characterization, additional markings and labels shall be affixed to waste containers to meet all applicable local, Federal, State and county Regulations for storage, transportation and disposal. This includes, but is not limited to hazardous waste (i.e., if hazardous waste due to lead or >50 ppm PCBs), DOT and asbestos standards, when applicable to the waste characteristics.
- g. The contractor shall disclose to all waste transporters and disposers the characteristics of the waste and the history of waste generation prior to arranging for disposal. Disposers of wastes that are free of visible PCB-containing caulking shall be advised that PCB-containing caulking was removed from these materials.
- h. As part of the PCB Management Plan, the Contractor shall submit to the Owner for approval information regarding the PCB containing waste hauler (waste transporter permits for all transit states), transport route and disposal site (waste disposal site permit) which demonstrates that they are authorized for transportation and disposal of the waste. The Contractor shall submit evidence that disposers of wastes that are free of visible PCB-containing caulking due to caulking removal were advised that PCB-containing caulking was removed from these materials. This can take the form of disposer waste profiles and disposer approvals, 15 day advance notifications

of solid waste landfills of disposal of PCB Bulk Product Waste or PCB Remediation Waste (per 40 CFR 761.61(a)(5)(i)(B)(2)(iv) and 761.62(b)(4)) or equivalent documentation.

3. Storage of waste on site

- a. Site storage involves grouping of materials by particular work site, even though the physical location of the storage site may be separate from the work site itself. Regardless of the location of the storage site, the requirements remain constant.
- b. The site shall be secure. The storage site shall be in a suitable location, acceptable to the Owner. Storage sites shall be on well-drained ground that is not subject to flooding (40 CFR Part 264.18). The area shall be enclosed by a fence or a designated locked area, and prominent warning signs shall be displayed around the perimeter. If the same storage site is also used for equipment and supplies, the waste containers shall be segregated within the site. This can be accomplished by placing all the debris material in assigned area within the secured site and surrounding this area with a temporary "fence" of ribbons or thin rope. Identification and warning signs shall be posted where the material is being stored, and all drums shall be placed on pallets or dunnage to prevent corrosive attack from moist soil. The containers shall be arranged so that the labels are visible at all times. The site shall be adequately protected from vandalism or unauthorized access by the public (40 CFR Part 264.14). A warning sign shall be posted where the waste is being stored, this sign shall read:

**"HAZARDOUS WASTE STORAGE AREA
NO SMOKING OR EATING"**

Note: At the completion of each work shift all hazardous or suspected- hazardous waste generated shall be stored in a suitable container that will prevent unauthorized access to the public. The container shall be constructed with rigid construction materials and have a lockable access door. If this is not feasible, the Contractor shall arrange for the removal of the material each day of the project.

4. Transportation requirements

- a. The Contractor shall warrant and represent that the entity providing waste transportation services shall possess a valid Waste Hauler's permit issued pursuant to the New York State Department of Environmental Conservation (NYSDEC) regulations, 6 NYCRR Part 364. In addition, if the waste is to be transported and disposed of out of New York State, permits from those states through which the waste will be transported and for where it will be disposed may be required. It is the responsibility of the Contractor to determine which permits are required and to provide such permits for review and approval of the Owner.

5. Additional disposal requirements

- a. The Contractor shall warrant and represent that all entities and/or individuals involved in the work shall possess all permits and/or licenses required under 40 CFR 761, 6 NYCRR 371 and 373, as well as any other federal, state or local permits or licenses required for removal, packaging, transportation and disposal of PCB containing waste.
- b. All PCB containing waste materials removed hereunder shall be lawfully treated and disposed by the Contractor at an Environmental Protection Agency (EPA) permitted treatment, storage, and disposal (TSD) facility or (if not hazardous waste) disposed in a permitted solid waste landfill in accordance with all applicable federal and state regulations.
- c. All wastes, drums, and other items removed hereunder shall be lawfully treated and/or disposed of by Contractor within thirty (30) days after removal from the site. The Contractor shall provide generator copy of the completed shipping documents for all PCB containing waste removed (for both hazardous and non-hazardous waste), which contain the information required under 40 CFR Part 262 Subpart B (hereinafter the "Manifest Form"), 40 CFR 761 and 6 NYCRR Part 372 to the Owner within 24-hours of the signing of the shipping papers by fax or email or via alternate means when directed by the Owner.
- d. For hazardous wastes, the Owner will forward copies of the manifest (upon receipt from the Contractor) to the generator state and disposal states. Also forward Certificates of Disposal which specify where each component of all wastes removed from the Owner's property is ultimately treated or disposed. Such Certificates shall include references to the Manifest Form for the shipment as well as address and EPA identification numbers for the generator facility.
- e. Contractor shall submit evidence to the Owner that those preparing/signing manifests have received DOT Hazardous Materials Shipping Training (initial and refresher every 3 years).
- f. Facilities or transporters which the Contractor intends to use to treat and/or dispose of PCB containing waste picked up hereunder shall be approved for use by the Owner prior to any delivery of waste by Contractor to such TSD facility. The Owner reserves the right to inspect the Contractor's transporters, equipment, equipment storage facility and TSD facility at any time.
- g. Should any problems arise regarding the TSD facility chosen to accept the waste for treatment and disposal that would require the return of waste to the Owner, or should such TSD facility violate any environmental law or regulation which would result in any regulatory enforcement action, the Contractor shall immediately notify the Owner in writing of such situation, identify an alternative TSD and obtain written approval from the Owner for disposal at such TSD.

- h. PCB-containing wastes shall be disposed at facilities licensed for the waste categories as shown below and described in this Article.

PCB Concentrations and Waste Type	PCB Bulk Product Waste	PCB Remediation Waste	NYS Hazardous Waste (HW)	NYS Non-Haz. Waste (Municipal Land Fill)	Construction & Demolition (C&D) Waste
Caulk < 50 ppm					X ¹
Caulk Waste ≥ 50 ppm (caulk /dust, no building materials)	X		X		
Caulk on Bldg. Material Waste (<50 ppm in composite waste; ≥50 ppm in caulk) ²	X		--- ³	X ³	
Caulk on Bldg. Material Waste (≥50 ppm in composite waste; ≥50 ppm in caulk)	X		X		
Bldg Material Waste <50 ppm with caulk >50 ppm removed (for HW Minimization)		X ^{3,4}	--- ^{3,4}	X ^{3,4}	
Wash water <50 ppm		X	--- ^{3,5}	X ^{3,5}	
Wash water ≥50 ppm		X	X		
ACM (≥ 1% Asbestos)					
TCLP >5 mg/L Lead					

Table Notes:

1. If all caulk has < 50 ppm PCB (as well as non-ACM and < TCLP for lead), all waste can be treated as C&D waste. Components and debris that never contacted PCB caulking or glazing may also be considered "C&D" waste.
2. NYS HW determination is based on combined average concentration of the entire building component/caulk waste. Since the weight of caulk/glazing on even the lightest wooden windows is ≤3%, windows with <1650 ppm PCBs in caulk may be disposed as PCB Bulk Product Waste in a permitted municipal/solid waste landfill.
3. Changes to HW (federal and NYS) if TCLP lead test results for painted building components/caulk are above 5 mg/L.
4. If caulking is completely removed from building materials prior to disposal to minimize hazardous waste generation, it is considered PCB Remediation Waste. Removal must lower the combined concentration of building material waste to <50 ppm to be non-hazardous and allow disposal in a municipal waste landfill.
5. Wash waste water <50 ppm is non-hazardous and it may be managed by a permitted industrial waste treatment/disposal facility or, if <3 µg/L, the contractor may seek NYC DEP approval as described in the specifications for discharge to the sanitary sewer treatment (40 CFR 761.79(b)(1)(ii)).
6. The caulk waste from the project shall be handled, stored, transported and disposed of in accordance with all applicable rules and regulations, including 40 CFR Part 761, 6 NYCRR 371 and 6 NYCRR 373.

B. LQG and SQG Hazardous Waste Management Requirements

1. The contractor shall conduct the work using methods that do not result in the facility exceeding the hazardous waste Large Quantity Generator (LQG) or Small Quantity Generator (SQG) thresholds summarized below (considering any existing school waste generation) or shall meet all LQG or SQG compliance requirements and provide the Owner with all LQG or SQG documentation required to demonstrate compliance at least two weeks before exceeding the thresholds (or before the effective date of the requirement, e.g., biennial reports).
 - a. Small Quantity Generator (SQG) — generates (in a calendar month) >100 kg and <1,000 kg of hazardous waste, ≤1 kg of acute hazardous waste, and ≤100 kg of acute hazardous waste spill residue or soil; and that also stores (at any time) ≤6,000 kg of hazardous waste, ≤1 kg acute hazardous waste and ≤100 kg of acute hazardous waste spill residue or soil.
 - b. Large Quantity Generator (LQG) — generates (in a calendar month) ≥1,000 kg of total hazardous waste or >1 kg of acute hazardous waste or >100 kg of acute hazardous waste spill residue or soil, or stores hazardous and acute hazardous wastes in greater quantities (at any time) than ≤6,000 kg of hazardous waste, ≤1 kg acute hazardous waste and ≤100 kg of acute hazardous waste spill residue or soil.
2. The contractor shall notify the Owner in the PCB Management Plan if their methods are projected to result in exceeding the LQG and SQG thresholds. The contractor shall track the rate of hazardous waste generation and total quantity accumulated during the work and shall notify the Owner in advance of any situation that will result in exceeding the LQG and SQG thresholds.
3. If the contractor will exceed the LQG or SQG thresholds, requirements contractor shall meet all applicable regulatory requirements including, but not limited to, the following:
 - a. Operation and Maintenance Requirements.
 - 1) Adequate aisle space is maintained for emergency equipment access.
 - 2) Housekeeping is performed to minimize the possibility of fire, explosion or unplanned release.
 - 3) All personnel involved in hazardous waste handling have immediate access either directly or through visual or voice contact with another employee to a telephone, a hand-held two-way radio or other alarm/device, capable of summoning external emergency assistance.
 - 4) Weekly inspections of all hazardous waste storage areas are performed and documented.

- b. Maintained and routinely test the following emergency equipment:
 - 1) Internal communications or alarm system capable of providing immediate emergency instruction (voice or signal).
 - 2) Telephone or hand-held two-way radio, capable of summoning emergency assistance from local police, fire or emergency responders.
 - 3) Portable fire extinguishers, fire control equipment, spill control equipment and decontamination equipment.
 - 4) Water at adequate volume and pressure to supply water hose streams, foam-producing equipment, automatic sprinklers or water spray systems.
- c. EPA Hazardous Waste Generator ID Number:
 - 1) Determine if there is an existing EPA hazardous waste generator identification number that must be used for waste manifests.
 - 2) If there is no existing EPA identification number, submit a "Notification of Regulated Waste Activity Form" (EPA Form 8700-12 Revised 7/2006) to the Owner concurrent with the PCB Management Plan.
- d. Waste Minimization:
 - 1) Follow the requirements of this specification regarding minimizing the generation of Hazardous Waste and certify on hazardous waste manifests that there is a waste minimization "program is in place."
- e. Training:
 - 1) All Personnel Handling Hazardous Waste: documented classroom instruction or on-the-job training directed by a person trained in hazardous waste management procedures on compliance with the requirements of 6 NYCRR 373-3.2.

END OF SECTION

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 Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, accessories, placement procedures, and finishes, for the following:
 - 1. Footings.
 - 2. Foundation walls.
 - 3. Slabs-on-grade.
 - 4. Concrete reconstruction and corrective work.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: For each type of product indicated.
 - a. Fiber reinforcement.
 - b. Vapor barrier.
 - c. Concrete sealer.
 - d. Curing compound.
 - e. Interior Slab control joint sealer.
 - f. Penetrating silane sealer.
 - g. Non-Shrink Grout.
 - h. Chemical anchor adhesives.
 - i. Corrective mortar (industry name is Repair mortar).
 - j. Thin coat patching mortar.
 - k. Corrective overlayment (industry name is Repair overlayment).

2. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments. Pumping of concrete requires a mix design specifically prepared and previously used for pumping.
 - a. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - b. Include compressive strength test reports.
 - c. Include all ingredient certifications and product data concurrently.
3. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement. Show all concrete wall and footing reinforcement on elevation drawings at a scale not less than 1/4-inch = 1 ft. Do not submit placement plans showing only piece marks referencing a cut list.
4. Slab-on-Grade Control Joint Layout Drawings: Indicate joints as shown on Drawings and proposed locations following required spacing requirements.

B. Informational Submittals:

1. Material Certificates: For each type of the following, signed by manufacturers or suppliers:
 - a. Reinforcing bars.
 - b. Epoxy-coated reinforcing bars.
 - c. Welded wire reinforcement.
 - d. Joint dowel bars.
 - e. Epoxy-coated joint dowel bars.
 - f. Cementitious materials.
2. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
 - a. Aggregates.
 - b. Vapor Barrier.
3. Proposed curing method for all concrete elements.
4. Curing compound compatibility with floor finishes and adhesives certificate.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
- B. Testing Agency Qualifications: An independent agency, qualified according to ASTM C 1077 and ASTM E 329 to perform material evaluation tests and to design concrete mixtures.

- C. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specifications for Structural Concrete," Sections 1 through 5
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
 - 2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
 - a. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips 3/4 by 3/4 inch, minimum.
- D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.
- E. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. VOC compliant.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

- F. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
 - 2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.
- B. Epoxy-Coated Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed bars, ASTM A 775/A 775M or ASTM A 934/A 934M, epoxy coated, with less than 2 percent damaged coating in each 12-inch bar length.
- C. Plain-Steel Welded Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

- A. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.
- B. Epoxy-Coated Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, ASTM A 775/A 775M epoxy coated.
- C. Epoxy Corrective Coating: Liquid, two-part, epoxy corrective coating; compatible with epoxy coating on reinforcement and complying with ASTM A 775/A 775M.
- D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For exterior concrete, use galvanized wire or dielectric-polymer-coated wire bar supports.
 - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I or Type II Supplement with the following (optional):
 - a. Fly Ash: ASTM C 618, Class F or C.

- b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- 2. Blended Hydraulic Cement: ASTM C 595 – Type IL, portland limestone; Type IS, portland blast-furnace slag; Type IP, portland-pozzolan; Type I (PM), pozzolan-modified portland; or Type I (SM), slag-modified portland cement.
- B. Normal-Weight Aggregates:
 - 1. Provide aggregates from a single source.
 - 2. ASTM C 33, Class 3S coarse aggregate or better, graded.
 - 3. ASTM C 33, Class 4S coarse aggregate or better, graded, for exterior concrete.
 - 4. Maximum Coarse-Aggregate Size:
 - a. Slabs on Grade: 1-1/2 inches nominal.
 - b. All Other Concrete: 1 inch nominal.
 - 5. Fine Aggregate: ASTM C 33. Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 1602/C 1602M and potable.

2.5 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing chlorides.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Accelerating Admixture: ASTM C 494/C 494M, Type C.
 - 4. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 5. Water-Reducing and Accelerating Admixture: ASTM C 494/C 494M, Type E.
 - 6. Mid-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type A or Type F. Water content reduction to be greater than 7%.
 - 7. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 8. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 9. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.6 FIBER REINFORCEMENT

- A. Synthetic Macro-Fiber: Polyolefin macro-fibers (containing no reprocessed olefin materials) engineered and designed for use as secondary reinforcing in concrete, complying with ASTM C 1116/C 1116M, Type III, 1 1/4 to 2-1/4 inches long, varying fiber thickness, and no water absorption.
 - 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. 3M; Scotchcast Polyolefin Fibers 2".
 - b. Master Builders Solutions US LLC; "MasterFiber MAC" Series.
 - c. Euclid Chemical Company (The), an RPM company; Tuf-Strand SF.
 - d. FORTA Corporation; FORTA FERRO.
 - e. GCP Applied Technologies Inc.; Strux 90/40.
 - f. Nycon, Inc.; XL.
 - g. Sika Corporation; Fibermesh 650.

2.7 VAPOR BARRIER

- A. Vapor Barrier: Water-vapor transmission rate (permeance) less than 0.015 perms (gr/ft²/hr/in-Hg), in accordance with ASTM E 1745. The product must meet water-vapor transmission rate (0.01 perms) requirement for both the new material and the ASTM E 1745 mandatory conditioning tests (ASTM E 1745; paragraphs 7.12 through 7.15.) Provide all manufacturers' accessories required for complete installation including mastic and seam tape. Seam tape to be provided with a water-vapor transmission rate of 0.3 perms or lower.
 - 1. Products: Subject to compliance with requirements, provide one of the following:
 - a. Layfield Construction Materials; VaporFlex 15.
 - b. Reef Industries, Inc.; Griffolyn Vaporguard.
 - c. Stego Industries, LLC; Stego Wrap 15 mil Class A.

2.8 SEALED CONCRETE

- A. Sealer: Clear, chemically reactive, waterborne solution of inorganic silicate or silicate materials and proprietary components; odorless; that penetrates, hardens, and densifies concrete surfaces.
 - 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. ChemMasters; Chemisil Plus.
 - b. ChemTec Int'l; ChemTec One.
 - c. Curecrete Distribution Inc.; Ashford Formula.
 - d. Dayton Superior Corporation; Day-Chem Sure Hard Densifier (J-17).
 - e. Euclid Chemical Company (The), an RPM company; Euco Diamond Hard.
 - f. Kaufman Products, Inc.; SureHard.
 - g. Laticrete International, Inc.; L&M Seal Hard.

- h. Meadows, W. R., Inc.; LIQUI-HARD.
- i. Metalcrete Industries; Floorsaver.
- j. Nox-Crete Products Group; Duro-Nox.
- k. Vexcon Chemicals, Inc.; Vexcon StarSeal PS Clear.

2.9 CURING MATERIALS

- A. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap–polyethylene sheet.
- B. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1-D, Class B, dissipating, with fugitive dye.
- C. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

2.10 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ½-inch rigid, extruded polystyrene insulation (at exterior walls,) ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.
- B. Interior Slab Control Joint Sealer: Two-component, self-leveling, flexible, 100 percent solids, epoxy resin and adhesive with a Type A shore durometer hardness of 80 per ASTM D 2240 and conforming to ACI 302.1R (5.12-Joint Materials).
 - 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. Chem Masters; PolyTops 480.
 - b. Euclid Chemical Company (The); DURAL 340 SL
 - c. Sika Corporation; Sikadur 51 SL.
- C. Penetrating, Silane Sealer: Single component, minimum 40% silane, waterbased slab sealer that forms chemical bond to the concrete. VOC compliant.
 - 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. Master Builders Solutions US LLC; MasterProtect H 400.
 - b. Chem Masters; Aquanil Plus 40.
 - c. Dayton Superior Corporation; Weather Worker 40% J29.
- D. Bond breakers: Waterborne, VOC compliant form release agent.
- E. Bonding Agent: ASTM C 882/C 882M, liquid bonding agent specifically designed to bond fresh cementitious materials to a variety of substrates for interior and exterior applications and provide an anti-corrosion coating for reinforcing steel.
 - 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. BASF Construction Chemicals; MasterEmaco P 124.
 - b. Euclid Chemical Company (The); DURAL LPL MV.
 - c. Sika Corporation; Sika Armatec 110 EpoCem.
- F. Non-Shrink Grout: ASTM C 1107, factory-packaged, shrinkage-resistant, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.
- G. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.
 - 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. DeWalt.; AC200+
 - b. Hilti, Inc.; Hit-HY 200A; Hit-HY 200R; Hit-Ice
 - c. ITW Redhead; A7+.

2.11 RECONSTRUCTION AND CORRECTIVE MATERIALS

- A. Corrective Mortar (Industry name is Repair Mortar): Site-mixed Portland-cement mix for vertical and overhead surfaces. Mix dry-pack corrective mortar, consisting of one part shrinkage-compensating, Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve by damp, loose volume, using only enough water for handling and placing.
- B. Thin Coat Patching Mortar: Polymer modified, Portland cement, suitable for interior and exterior applications. Featheredge up to 3/16 inch. For thicker applications manufacturer's recommendations to extend mix with an aggregate may apply.
 - 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. BASF Construction Chemicals; MasterTop 115FC.
 - b. ChemMasters, Inc.; Thin Patch
 - c. Euclid Chemical Company (The); Duraltop Flowable Mortar.
- C. Corrective Overlayment (Industry name is Repair Overlayment): Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations. For thicker applications manufacturer's recommendations to extend mix with an aggregate may apply.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
 - 4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.12 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
 - 1. Fly Ash: 25 percent, but if used, a minimum of 15 percent.
 - 2. Combined Fly Ash and Pozzolan: 25 percent.
 - 3. Ground Granulated Blast-Furnace Slag: 50 percent.
 - 4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use water-reducing, high-range water-reducing or plasticizing admixture in all concrete. Design mix for optimum placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 - 3. Use a mid-range, water-reducing admixture in pumped concrete, all concrete slabs (including concrete walks), concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.13 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. Architectural Concrete Elements and Foundation Walls or Building Walls: Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.50.
 - 3. Slump Limit: 4 inches, plus or minus 1 inch; or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch nominal maximum aggregate size.
- B. Interior Slabs-on-Grade: Proportion normal-weight concrete mixture as follows:
 - 1. Minimum Compressive Strength: 4000 psi at 28 days.

2. Maximum Water-Cementitious Materials Ratio: 0.50.
3. Minimum Cementitious Materials Content: 470 lb/cu. yd..
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
6. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..

2.14 CONCRETE MIXTURES FOR EXTERIOR CONCRETE

- A. Exterior Slabs (concrete pads, walks and curbs): Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 4500 psi at 28 days.
 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 3. Slump Limit: 4 inches, plus or minus 1 inch; or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
 5. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..

2.15 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.16 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that subgrade conditions are satisfactory prior to forming or pouring concrete. Owner's Testing Agency shall inspect slab and footing subgrade prior to placing concrete.
- B. Verify that formwork is complete and properly secured prior to placing concrete.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 - 2. Class C, 1/2 inch for rough-formed finished surfaces without additional finish, permanently exposed.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 - 1. Install keyways, reglets, recesses, and the like, for easy removal.
 - 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- M. For smooth-rubbed finish, provide uniform spacing and size of cone ties which break off at least 1-1/2 inches from face of concrete and leave holes not more than 1-inch diameter in face of concrete.

3.3 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.4 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of walls and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations and curing and protection operations need to be maintained.
- B. Clean and provide corrective work to surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.5 VAPOR BARRIERS

- A. Place, protect, and correct vapor barrier according to ASTM E 1643 and manufacturer's written instructions.
 - 1. Lap joints 6 inches and seal with manufacturer's recommended tape.

3.6 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor barrier. Correct damage and reseal vapor barrier before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.
- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

- F. Epoxy-Coated Reinforcement: Correct cut and damaged epoxy coatings with epoxy corrective coating according to ASTM D 3963/D 3963M. Use epoxy-coated steel wire ties to fasten epoxy-coated steel reinforcement.
- G. Field bending or straightening of bars partially embedded in concrete is permitted only where shown on the Drawings.
- H. All openings in concrete walls with a dimension of one foot or greater are to have two #5 bars on all sides of opening, unless noted otherwise.

3.7 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 4. Roughen surface of hardened concrete, wet surface, and immediately pour fresh concrete against wet surface.
- C. Vertical Control Joints in Walls: Space vertical control joints in walls that have any portion exposed to public view as shown on Drawings or, if not indicated, at 20 feet maximum.
- D. Control joints in Slabs-on-Grade: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:
 - 1. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks. Space joints as shown on Drawings or, if not indicated, at 12 feet average spacing and not exceeding 15 feet. Locate joints at column centerlines where possible.
- E. Isolation Joints in Slabs-on-Grade: Install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
 - 1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated.

2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 07 Section "Joint Sealants," are indicated.
 3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.
- F. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.8 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, (4.3.2.1 Slump Adjustment.)
1. With each concrete mixture submittal, indicate amounts of mixing water to be withheld for later addition at Project site.
 2. Water added must not increase the water-cement ratio past the approved mix design ratio.
 3. Add additional water reducer or plasticizer to mix instead of adding water to achieve flowable, workable concrete. Do not add water to concrete after adding these admixtures to mixture.
 4. Do not add water after truck is more than half empty.
- C. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- D. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Maintain reinforcement in position on chairs during concrete placement.
 3. Screed slab surfaces with a straightedge and strike off to correct elevations.
 4. Slope surfaces uniformly to drains where required.
 5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- F. Hot-Weather Placement: Comply with ACI 301 and ACI 305R and as follows:
1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.9 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects corrected and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Correct and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view, or to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.

- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.10 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
 - 1. Apply float finish to surfaces to receive trowel finish or to receive broom finish.
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
 - 1. Apply a trowel finish to surfaces exposed to view.
 - a. **For fiber reinforced concrete**, to provide consolidation and bury surface fibers, open slab surfaces to be struck off with a vibrating screed or laser screed. Where a laser screed is used, adjust the magnitude of vibration and control the speed of the refracting leveling head to ensure adequate consolidation of the concrete and embedment of the fibers. Magnesium floats in the form of a bullfloat, channel radius float, or highway straightedge to be used to establish a surface and close tears or open areas. **Do not use wood floats.**
 - b. For slabs to receive Flooring Treatment, provide a power trowelled finish, do not hand trowel.
 - 2. Flatness and Levelness: Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
 - a. Conventional: Specified overall values of flatness, F(F) 20; and of levelness, F(L) 15; with minimum local values of flatness, F(F) 15; and of levelness, F(L) 10; for all other floor finishes not noted below.
 - b. Moderately Flat: Specified overall values of flatness, F(F) 25; and of levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and of levelness, F(L) 15; for slabs to receive carpeting, vinyl composition tile, and linoleum.
 - 3. Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.

4. For all floor finish classifications, also measure floor finish tolerances after slab has cured and dried out, within 2 weeks before installation of floor finish materials to establish compliance with flooring manufacturer's tolerance requirements and to determine if corrective leveling is required.
- D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces to receive carpet or vinyl composition tile. While concrete is still plastic, slightly scarify surface with a fine broom.
 1. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.
- E. Broom Finish: Apply a broom finish to exterior concrete walks, slabs, platforms, steps, ramps, and elsewhere as indicated.
 1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application. **For synthetic fiber reinforced concrete**, pull broom in a single direction and do not excessively overlap previously textured concrete.
- F. Exposed Architectural Concrete Surfaces: Use the same finish procedure for all pours. All pours to be done in similar weather conditions. Use breathable sealer after set to prevent efflorescence.
- G. Exterior Concrete Walks and Slabs: Apply penetrating, silane sealer per manufacturer's instructions.

3.11 MISCELLANEOUS CONCRETE ITEMS

- A. Filling In: Fill in holes and openings left in concrete structures after work of other trades is in place unless otherwise indicated. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.
- B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
- C. Equipment Bases and Foundations:
 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
 2. Construct concrete bases 4 inches high unless otherwise indicated; and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated or unless required for seismic anchor support.
 3. Minimum Compressive Strength: 4000 psi at 28 days.
 4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
 5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base, and anchor into structural concrete substrate.

6. Prior to pouring concrete, place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
7. Cast anchor-bolt insert into bases. Install anchor bolts to elevations required for proper attachment to supported equipment.

3.12 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 and 305R for hot-weather protection during curing.
- B. Slabs: Protect slabs within building from precipitation accumulation. Immediately remove water, snow or ice from surface of slabs within building regardless if source is from precipitation, construction activities, etc.
- C. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- E. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces. Protect all slabs from precipitation accumulation.
- F. Cure concrete according to ACI 308.1, by one of the following methods:
 1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately correct any holes or tears during curing period using cover material and waterproof tape.
 - a. Use moisture-retaining covers to cure all interior slabs on grade.
 2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and correct damage during curing period.
- G. Exposed Architectural Concrete Surfaces: From time of pour, to Final Completion, protect all Architectural Concrete elements from damage, disfiguration, discoloration, staining, and all other types of damage which would affect the final appearance of the Architectural Concrete elements. Protection is to include, but is not limited to:

1. All hydraulic powered equipment must be diapered to avoid staining on the concrete.
2. Drops cloths need to be placed under vehicles/equipment at all times.
3. No pipe cutting machines shall be used on the slabs.
4. Steel shall not be placed on slabs to avoid rust staining.
5. Provide shields and other protective elements over Architectural Concrete elements.

3.13 SEALED CONCRETE

- A. Sealer: Prepare, apply, and finish sealer according to manufacturer's written instructions.
 1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface corrective work.
 2. Do not apply to concrete that is less than 28 days old.
 3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing. Rinse with water; remove excess material until surface is dry. Apply a second coat in a similar manner if surface is rough or porous.

3.14 JOINT SEALING

- A. Prepare, clean, and install slab control joint sealer according to manufacturer's written instructions.
 1. Defer joint sealing until concrete has aged at least one month(s). Do not seal joints until construction traffic has permanently ceased.
- B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.
- C. Install semirigid joint sealer full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint sealer flush with top of joint after hardening.

3.15 CONCRETE SURFACE CORRECTIVE WORK

- A. Defective Concrete: Correct and patch defective areas when approved by Architect. Remove and replace concrete that cannot be corrected and patched to Architect's approval.
- B. Correcting Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins, exposed or otherwise visible fiber reinforcement, and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete. Limit cut depth to 3/4 inch. Make edges of cuts perpendicular to concrete surface. Remove exposed or otherwise visible fiber reinforcement from the concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with corrective mortar before bonding agent has dried. Fill form-tie voids with corrective mortar or cone plugs secured in place with bonding agent.
 2. Correct defects on surfaces exposed to view by blending white Portland cement and standard Portland cement so that, when dry, corrective mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 3. Correct defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- C. Correcting Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
1. Correct finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions such as exposed or otherwise visible fiber reinforcement.
 2. After concrete has cured at least 14 days, correct high areas by grinding.
 3. Remove exposed or otherwise visible fiber reinforcement from the concrete surface. If concrete surface is damaged by the process of fiber removal, correct surface as described by the remainder of this section.
 4. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with thin coat patching mortar. Finish corrected areas to blend into adjacent concrete.
 5. Correct other low areas scheduled to remain exposed with a corrective overlayment. Cut out low areas to ensure a minimum corrective overlayment depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply corrective overlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Correct defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Correct random cracks and single holes 1 inch or less in diameter with corrective overlayment. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete. Place corrective overlayment before surface has dried. Finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

D. Perform structural reconstruction of existing concrete according to the Drawings.

3.16 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports, except where noted.

B. Contractor to supply all batch tickets to Owner's testing agency. Batch tickets to note w/c ratio and amount of water allowed to be added at Project site.

C. Inspections:

1. Steel reinforcement placement.
2. Chemical Anchors: Test 5% of all chemical anchors in tension, randomly selected but in varied locations. Testing to be in accordance with ASTM E 488 to the approved manufacturer's allowable loads. Concrete must cure a minimum of 3 days prior to testing. Do not test anchors until after the anchor manufacturer's recommended curing time. If an anchor fails during this test additional anchors may be requested to be tested as directed by the Architect.
3. Verification of use of required design mixture.
4. Concrete placement, including conveying and depositing.
5. Curing procedures and maintenance of curing temperature.
6. Verification of concrete strength before removal of shores and forms from beams and slabs.
7. Vapor barrier inspection after installation. To be performed by the vapor barrier manufacturer. Verify correct installation according to specifications and details. To be performed no more than 48 hours prior to slab pour.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day, nor less than once per each 5000 square foot of surface area of walls or slabs.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Include corresponding concrete mix batch tickets with each test report.
3. Indicate amount of water added to batch at Project site.
4. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change. Measure after slump adjustment. Pumped concrete is to be tested at point of placement, with an additional slump test taken at point of delivery.
5. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
7. Density (Unit Weight): ASTM C 138/C 138M, fresh unit weight of concrete. Two tests per truck load; one at beginning of pour and near end of pour.
8. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and standard cure six (6) cylinder specimens for each composite sample.
 - b. Cast and field cure two (2) standard cylinder specimens for each composite sample.
 - c. Autoclave curing and oven-drying of test specimens containing synthetic fiber is not permitted.
9. Compressive-Strength Tests: ASTM C 39/C 39M;
 - a. Test two standard cured specimens at 7 days, three specimens at 28 days, and retain one specimen for testing at 56 days as deemed necessary by Architect.
 - b. Test two field-cured specimens at 28 days.
 - c. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
 - d. If one specimen in the test shows evidence of improper sampling, molding or testing, discard the specimen and consider the strength of the remaining cylinders to be the test result. If more than one specimen in a test shows any defects, discard the entire test.
10. Test for workability and air content of each synthetic fiber reinforced concrete mixture composite sample taken according to ASTM C172 (except that wet-sieving is not permitted) and whenever consistency of concrete appears to vary, according to ASTM C 1116.

11. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
 12. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
 13. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
 14. Nondestructive Testing: Impact-echo, ultrasonic methods, or other nondestructive methods may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
 15. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
 16. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
 17. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.
- E. Measure floor and slab flatness and levelness for "Flat" floor classifications to receive resilient wood flooring, according to ASTM E 1155 within 72 hours of finishing.

END OF SECTION 03 30 00

SECTION 03 33 00 - ARCHITECTURAL CONCRETE**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section includes cast-in-place architectural concrete including form facings, reinforcement accessories, concrete materials, concrete mixture design, placement procedures, and finishes.

1.3 DEFINITIONS

- A. Cast-in-Place Architectural Concrete: Formed concrete that is exposed to view on surfaces of completed structure or building and that requires special concrete materials, formwork, placement, or finishes to obtain specified architectural appearance.
- B. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.
- C. Design Reference Sample: Sample designated by Architect in the Contract Documents that reflects acceptable surface quality and appearance of cast-in-place architectural concrete.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Form-facing panels.
 - 2. Rustication strips.
 - 3. Chamfer strips.
 - 4. Form sealer.
 - 5. Form-release agent.
 - 6. Form ties.
 - 7. Admixtures.
 - 8. Fiber reinforcement.
 - 9. Curing materials.
 - 10. Corrective mortar (industry name is Repair mortar).

- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments. Pumping of concrete requires a mix design specifically prepared and previously used for pumping.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
 - 2. Include compressive strength test reports.
 - 3. Include all ingredient certifications and product data concurrently.
- C. Samples: For each of the following materials:
 - 1. Form-facing panels.
 - 2. Form ties.
 - 3. Chamfers and rustications.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For the following:
 - 1. Cementitious materials.
- B. Material Test Reports: For the following, by a qualified testing agency:
 - 1. Aggregates.
- C. Proposed curing method for all concrete elements.

1.7 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.
- B. Installer Qualifications: An installer who has a minimum of 10 completed successful projects with similar Architectural Concrete installations.
- C. Testing Agency Qualifications: An independent agency, qualified according to ASTM C1077 and ASTM E329 to perform material evaluation tests and to design concrete mixtures.
 - 1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician - Grade I. Testing Agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician - Grade II.
- D. Source Limitations for Cast-in-Place Architectural Concrete: Obtain each color, size, type, and variety of concrete material and concrete mixture from single manufacturer with resources to provide cast-in-place architectural concrete of consistent quality in appearance and physical properties.

- E. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 - 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5 and Section 6, "Architectural Concrete."
 - 2. ACI 303.1, "Specification for Cast-in-Place Architectural Concrete."

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. General: Comply with Division 03 Section "Cast-in-Place Concrete" for formwork and other form-facing material requirements.
- B. Form-Facing Panels for As-Cast Finishes: Exterior-grade plywood panels (minimum 3/4" thick,) nonabsorptive, that will provide continuous, true, and smooth architectural concrete surfaces, medium-density overlay, Class 1, or better, mill-applied release agent and edge sealed, complying with DOC PS 1.
- C. Rustication Strips: Metal, rigid plastic, or dressed wood with sides beveled and back kerfed; nonstaining; in longest practicable lengths.
- D. Chamfer Strips: Metal, rigid plastic, elastomeric rubber, or dressed wood, 3/4 by 3/4 inch, minimum; nonstaining; in longest practicable lengths.
- E. Form Joint Tape: Compressible foam tape; pressure sensitive; AAMA 800, "Specification 810.1, Expanded Cellular Glazing Tape"; minimum 1/4 inch thick.
- F. Form Joint Sealant: Elastomeric sealant complying with ASTM C920, Type M or Type S, Grade NS, that adheres to form joint substrates.
- G. Form Sealer: Penetrating, clear, polyurethane wood form sealer formulated to reduce absorption of bleed water and prevent migration of set-retarding chemicals from wood.
- H. Form-Release Agent: Commercially formulated, colorless form-release agent that will not bond with, stain, or adversely affect architectural concrete surfaces and will not impair subsequent treatments of those surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- I. Form Ties: Factory-fabricated, glass-fiber-reinforced plastic internally disconnecting or removable ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
 - 1. Furnish glass-fiber-reinforced plastic ties, not less than 1/2 inch in diameter, of color to match Architect's sample.

2.2 STEEL REINFORCEMENT AND ACCESSORIES

- A. General: Comply with Division 03 Section "Cast-in-Place Concrete" for steel reinforcement and other requirements for reinforcement accessories.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire fabric in place; manufacture according to CRSI's "Manual of Standard Practice."
 - 1. Where legs of wire bar supports contact forms, use gray, all-plastic or CRSI Class 1, gray, plastic-protected bar supports.

2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C150, Type I/II, white.
- B. Normal-Weight Coarse Aggregates: ASTM C33, Class 1N coarse aggregate or better, graded. Provide aggregates from single source.
 - 1. Maximum Coarse-Aggregate Size: 1 inch.
 - 2. Gradation: Uniformly graded.
- C. Normal-Weight Fine Aggregate: ASTM C33, manufactured or natural sand, from same source for entire Project.
- D. Water: Potable, complying with ASTM C94/C94M except free of wash water from mixer washout operations.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
 - 2. Retarding Admixture: ASTM C494/C494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
 - 4. Mid-Range, Water-Reducing Admixture: ASTM C494/C494M, Type A or Type F. Water content reduction to be greater than 7 percent.
 - 5. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
 - 6. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
 - 7. Plasticizing and Retarding Admixture: ASTM C1017/C 1017M, Type II.

2.5 FIBER REINFORCEMENT

- A. Synthetic Macro-Fiber: Polyolefin macro-fibers (containing no reprocessed olefin materials) engineered and designed for use as secondary reinforcing in concrete, complying with ASTM C1116/C1116M, Type III, 1 1/4 to 2-1/4 inches long, varying fiber thickness, and no water absorption.
 - 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. 3M; Scotchcast Polyolefin Fibers 2".
 - b. BASF Construction Chemicals, "MasterFiber MAC" Series
 - c. Euclid Chemical Company (The), an RPM company; Tuf-Strand SF.
 - d. FORTA Corporation; FORTA FERRO.
 - e. Grace Construction Products, W. R. Grace & Co.; Strux 90/40.
 - f. Nycon, Inc.; XL.
 - g. Propex Concrete Systems Corp.; Fibermesh 650.
 - h. Sika Corporation; Sika Fiber MS10.

2.6 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1-D, Class B, dissipating with fugitive dye.
 - 1. For concrete indicated to be sealed, curing compound shall be compatible with sealer.

2.7 RECONSTRUCTION AND CORRECTIVE MATERIALS

- A. Bonding Agent: ASTM C882/C882M, liquid bonding agent specifically designed to bond fresh cementitious materials to a variety of substrates for interior and exterior applications and provide an anti-corrosion coating for reinforcing steel.
 - 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. BASF Construction Chemicals - Building Systems; Emaco P24.
 - b. Euclid Chemical Company (The); Corr-Bond.
 - c. Sika Corporation; Sika Armatec 110 EpoCem.
- B. Corrective Mortar (industry name is Repair Mortar): Site-mixed Portland-cement mix for vertical and overhead surfaces. Mix dry-pack corrective mortar, consisting of one part shrinkage-compensating, Portland cement to two and one-half parts fine aggregate passing a No. 16 sieve by damp, loose volume, using only enough water for handling and placing.

2.8 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of cast-in-place architectural concrete proportioned on basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed design mixtures based on laboratory trial mixtures.
- B. Proportion concrete mixtures as follows:
 - 1. Compressive Strength (28 Days): 4000 psi.
 - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
 - 3. Slump Limit: or 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
 - 4. Synthetic Macro-Fiber: Uniformly disperse in concrete mixture, at concrete batch facility, at manufacturer's recommended rate, but not less than 3.0 lb/cu. yd..
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.

2.9 CONCRETE MIXING

- A. Ready-Mixed Architectural Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M and furnish batch ticket information.
 - 1. Clean equipment used to mix and deliver cast-in-place architectural concrete to prevent contamination from other concrete.
 - 2. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that reinforcing is properly in place prior to pouring concrete.
- B. Verify that formwork is complete and properly secured prior to placing concrete.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 FORMWORK

- A. General: Comply with Division 03 Section "Cast-in-Place Concrete" for formwork, embedded items, and shoring and reshoring.

- B. Limit deflection of form-facing panels to not exceed ACI 303.1 requirements.
- C. In addition to ACI 303.1 limits on form-facing panel deflection, limit cast-in-place architectural concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 - 1. Class A, 1/8 inch.
- D. Fabricate forms to result in cast-in-place architectural concrete that complies with ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-in-place surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood rustications, keyways, reglets, recesses, and the like, for easy removal.
 - 1. Seal form joints and penetrations at form ties with form joint tape or form joint sealant to prevent cement paste leakage.
 - 2. Do not use rust-stained steel form-facing material.
- F. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- G. Chamfer exterior corners and edges of cast-in-place architectural concrete.
- H. Coat contact surfaces of wood rustications and chamfer strips with sealer before placing reinforcement, anchoring devices, and embedded items.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.3 REINFORCEMENT AND INSERTS

- A. General: Comply with Division 03 Section "Cast-in-Place Concrete" for fabricating and installing steel reinforcement. Securely fasten steel reinforcement and wire ties against shifting during concrete placement.
- B. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.4 REMOVING AND REUSING FORMS

- A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - 1. Cut off and grind glass-fiber-reinforced plastic form ties flush with surface of concrete.
- B. Clean and provide corrective work to surfaces of forms to be reused in the Work. Do not use split, frayed, delaminated, or otherwise damaged form-facing material. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for cast-in-place architectural concrete surfaces.

3.5 JOINTS

- A. Construction Joints: Install construction joints true to line with faces perpendicular to surface plane of cast-in-place architectural concrete so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints unless otherwise indicated.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete. Align construction joint within rustications attached to form-facing material.
 - 3. Space vertical joints in walls as indicated, if not indicated, at 20 feet maximum. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
- B. Contraction Joints: Form weakened-plane contraction joints true to line with faces perpendicular to surface plane of cast-in-place architectural concrete so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

3.6 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, form-release agent, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, (4.3.2.1 Slump Adjustment.)
 - 1. With each concrete mixture submittal, indicate amounts of mixing water to be withheld for later addition at Project site.
 - 2. Water added must not increase the water-cement ratio past the approved mix design ratio.

3. Add additional water reducer or plasticizer to mix instead of adding water to achieve flowable, workable concrete. Do not add water to concrete after adding these admixtures to mixture.
 4. Do not add water after truck is more than half empty.
- C. Deposit concrete continuously between construction joints. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 303.1.
 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. Do not permit vibrators to contact forms.

3.7 FINISHES, GENERAL

- A. Architectural Concrete Finish: Match Architect's design reference sample, identified and described as indicated, to satisfaction of Architect.
- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces.
1. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.
- C. Maintain uniformity of special finishes over construction joints unless otherwise indicated.

3.8 AS-CAST FORMED FINISHES

- A. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Remove fins and other projections exceeding specified limits on formed-surface irregularities. Do not correct and patch tie holes and defects.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with ACI 301 for hot-weather protection during curing.

- B. Begin curing cast-in-place architectural concrete immediately after removing forms from concrete. Cure according to ACI 308.1, by one or a combination of the following methods that will not mottle, discolor, or stain concrete:
 - 1. Curing Compound: Mist concrete surfaces with water. Apply curing compound uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and correct damage during curing period.

3.10 FIELD QUALITY CONTROL

- A. General: Comply with field quality-control requirements in Division 03 Section "Cast-in-Place Concrete."

3.11 CORRECTIVE WORK, PROTECTION, AND CLEANING

- A. Correct and cure damaged finished surfaces of cast-in-place architectural concrete when approved by Architect. Match corrective work to color, texture, and uniformity of surrounding surfaces and to corrective work on approved mockups.
 - 1. Remove and replace cast-in-place architectural concrete that cannot be corrected and cured to Architect's approval.
- B. Protect corners, edges, and surfaces of cast-in-place architectural concrete from damage; use guards and barricades.
- C. Protect cast-in-place architectural concrete from staining, laitance, and contamination during remainder of construction period.
- D. Clean cast-in-place architectural concrete surfaces after finish treatment to remove stains, markings, dust, and debris.
- E. Wash and rinse surfaces according to concrete finish applicator's written instructions. Protect other Work from staining or damage due to cleaning operations.
 - 1. Do not use cleaning materials or processes that could change the appearance of cast-in-place architectural concrete finishes.

END OF SECTION 03 33 00

SECTION 03 54 15 – MOISTURE CONTROL SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes moisture control system for concrete surfaces below hydraulic-cement-based underlayment and interior floor coverings.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

- 1. Moisture control system.
- 2. Crack and joint filler.
- 3. Patching compound.

- B. Warranty: Sample of special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer Certificates: Signed by manufacturers of moisture control system, underlayment and floor covering system certifying that products are compatible.
- B. Agreement to Warranty: Signed by manufacturer of moisture control system confirming agreement to warranty the system.

1.6 CLOSEOUT SUBMITTALS

- A. Warranty: Executed special warranty.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: Installer who is approved by manufacturer for application of moisture control system products required for this Project.
- B. Product Compatibility: Manufacturers of moisture control system, underlayment and floor covering system certify in writing that products are compatible.
- C. Pre-installation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

1.9 PROJECT CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature and humidity, ventilation, and other conditions affecting moisture control system performance.
 - 1. Place moisture control system only when ambient temperature and temperature of substrates are between 50 and 80 deg F. Expedite installation if substrate and site conditions are above 70 deg F.
 - 2. Place moisture control system only when building is enclosed, with permanent HVAC system operating.

1.10 COORDINATION

- A. Coordinate application of moisture control system with requirements of underlayment products, specified in other Division 03 Sections, and with requirements of floor covering products, including adhesives, specified in Division 09 Sections, to ensure compatibility of products.

1.11 WARRANTY

- A. Special Warranty: Moisture control system manufacturer's standard form in which manufacturer agrees to repair or replace moisture control system that does not comply with requirements to properly control moisture within specified warranty period.
 - 1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MOISTURE CONTROL SYSTEM

- A. Moisture Control System: One-component epoxy-based moisture control system “Ardex MC Rapid” consisting of primer, P-4 and sealer coats.
- B. Sand: Fine sand less than 1/50 of an inch in grain size or 98.5 percent passing sieve size #35. Keep sand clean and dry as per manufacturers recommendation.
- C. Crack and Joint Filler: Two-part epoxy crack and joint filler.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ardex Ardifix Joint Sealant.
- D. Patching Compound: Portland cement-based smoothing compound.
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ardex; K-60, K-301 and MRP.
- E. Water: Potable and at a temperature of not more than 70 deg F.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, with Installer present, for conditions affecting performance.
 - 1. File pre-installation checklist with manufacturer and obtain manufacturer’s written agreement to warranty and confirmation of approval to proceed.
 - 2. Proceed with application only after unsatisfactory conditions have been corrected.
- B. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 PREPARATION

- A. General: Prepare and clean substrate according to manufacturer's written instructions.
 - 1. Treat nonmoving substrate cracks according to manufacturer's written instructions to prevent cracks from telegraphing (reflecting) through moisture control system.

- B. Concrete Substrates: Mechanically remove, according to manufacturer's written instructions, laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants that might impair moisture control system bond. Prepare surface to achieve minimum surface profile of ICRI CSP #3 (light shot blast).
 - 1. Apply patching compound to pre-smooth concrete where mechanical preparation results in a surface exceeding limits set by moisture control system manufacturer.
- C. Testing: Test substrates for moisture vapor emissions in accordance with either of the following methods:
 - 1. Moisture Testing Method 1: Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates do not exceed a maximum moisture-vapor-emission rate of 20 lb.
 - 2. Moisture Testing Method 2: Perform relative humidity test, ASTM F 2170. Proceed with installation only after substrates do not exceed a maximum relative humidity of 95 percent as measured by a Wagner Rapid RH probe.

3.3 APPLICATION

- A. General: Mix and apply moisture control system components according to manufacturer's written instructions.
 - 1. Close areas to traffic during moisture control system application and for time period after application recommended in writing by manufacturer.
 - 2. Coordinate application of components to provide optimum substrate and intercoat adhesion.
 - 3. At substrate expansion, isolation, and other moving joints, allow joint of same width to continue through moisture control system.
- B. Apply primer over prepared substrate at manufacturer's recommended spreading rate.
- C. Apply sealer coat over primer at manufacturer's recommended spreading rate. While sealer coat is fresh, broadcast sand layer at manufacturer's recommended spreading rate.
- D. Unless otherwise recommended by manufacturer, allow system to cure for at least 16 hours before broom sweeping and vacuuming to remove excess sand.
- E. Do not allow traffic of any type on unprotected moisture control system.
- F. Apply compatible underlayment over moisture control system after time period recommended in writing by manufacturer.

3.4 PROTECTION

- A. Protect moisture control system during installation of construction over system and for remainder of construction period.

END OF SECTION 03 54 15

SECTION 04 01 20.19 - UNIT MASONRY RESTORATION**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cleaning unit masonry surfaces.
 - 2. Removing and replacing brick masonry.
 - 3. Reanchoring veneers.
 - 4. Repointing joints with mortar.

1.3 DEFINITIONS

- A. Low-Pressure Spray: 100 to 400 psi; 4 to 6 gpm.
- B. Rebuilding (Setting) Mortar: Mortar used to set and anchor masonry in a structure, distinct from pointing mortar installed after masonry is set in place.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to unit masonry restoration including, but not limited to, the following:
 - a. Verify unit masonry restoration specialist's personnel, equipment, and facilities needed to make progress.
 - b. Materials, material application, sequencing, tolerances, and required clearances.
 - c. Cleaning program.
 - d. Reconstruction program.
 - e. Repointing program.
 - f. Quality-control program.

1.5 SEQUENCING AND SCHEDULING

- A. Work Sequence: Perform unit masonry restoration work in the following sequence, which includes work specified in this and other Sections:
 - 1. Remove plant growth.

2. Inspect masonry for open mortar joints and permanently or temporarily point them before cleaning to prevent the intrusion of water and other cleaning materials into the wall.
3. Clean masonry.
4. Rake out mortar from joints surrounding masonry to be replaced and from joints adjacent to masonry reconstruction areas along joints.
5. Reconstruct masonry, including replacing existing masonry with new masonry materials.
6. Rake out mortar from joints to be repointed.
7. Point mortar joints.
8. After reconstruction and repointing have been completed and cured, perform a final cleaning to remove residues from this work.

1.6 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 1. Refer to Division 04 Section "Unit Masonry" for Face brick, Mortar, Portland cement, Flashings, Weep products and Accessories.
 2. Masonry reconstruction anchors.
 3. Nonacidic gel cleaner.
 4. Nonacidic liquid cleaner.
 5. Liquid strippable masking agent.

1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For unit masonry restoration specialist including field supervisors and workers.
- B. Cleaning program.
- C. Reconstruction program.
- D. Repointing program.
- E. Quality-control program.

1.9 QUALITY ASSURANCE

- A. Unit Masonry Restoration Specialist Qualifications: Engage an experienced unit masonry restoration firm to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing masonry is insufficient experience for masonry restoration work.
 1. Field Supervision: Unit masonry restoration specialist firm shall maintain experienced full-time supervisors on Project site during times that unit masonry restoration work is in progress.

2. Workers: Persons who are experienced in unit masonry restoration work of types they will be performing.
 3. At Contractor's option, work may be divided between two specialist firms: one for cleaning work and one for reconstruction/repointing work.
- B. Cleaning Program: Prepare a written cleaning program that describes cleaning process in detail, including materials, methods, and equipment to be used; protection of surrounding materials; and control of runoff during operations.
 - C. Reconstruction Program: Prepare a written reconstruction program that describes reconstruction process in detail, including materials, methods, and equipment to be used; and protection of surrounding materials.
 - D. Repointing Program: Prepare a written repointing program that describes repointing process in detail, including materials, methods, and equipment to be used; and protection of surrounding materials.
 - E. Quality-Control Program: Prepare a written quality-control program for this Project to systematically demonstrate the ability of personnel to properly follow methods and use materials and tools without damaging masonry. Include provisions for supervising performance and preventing damage.

1.10 MOCKUPS

- A. Cleaning Mockups: Prepare mockups of cleaning on existing surfaces to demonstrate aesthetic effects and to set quality standards for materials and execution.
 1. Clean an area approximately 24 sq. ft. for each type of masonry and surface condition.
 - a. Test cleaners and methods on samples of adjacent materials for possible adverse reactions. Do not test cleaners and methods known to have deleterious effect.
 - b. Allow a waiting period of not less than seven days after completion of sample cleaning to permit a study of sample panels for negative reactions.
- B. Brick Masonry Reconstruction Mockups: Prepare mockups of brick masonry reconstruction to demonstrate aesthetic effects and to set quality standards for materials and execution and for fabrication and installation.
 1. Prepare sample areas for each type of masonry reconstruction work performed. If not otherwise indicated, size each mockup not smaller than 72 inches wide by 48 inches high. Construct sample areas in locations in existing walls where directed by Architect unless otherwise indicated. Demonstrate quality of materials, workmanship, and blending with existing work. Include the following as a minimum:
 - a. Replacement: Four brick units replaced.
 - b. Reanchoring Veneers: Three masonry reconstruction anchors of each type installed.

- C. Repointing Mockups: Prepare mockups of brick masonry repointing to demonstrate aesthetic effects and to set quality standards for materials and execution.
 - 1. Rake out joints in an area not smaller than 72 inches wide by 48 inches high, in two halves, each approximately 36 inches wide demonstrating each type of repointing required and repoint one of the areas.
- D. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
- E. Subject to compliance with requirements, approved mockups may become part of the completed Work if approved by Architect.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver bricks to Project site strapped together in suitable packs or pallets or in heavy-duty cartons and protected against impact and chipping.
- B. Deliver packaged materials to Project site in manufacturer's original and unopened containers, labeled with manufacturer's name and type of products.
- 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 hydrated lime in manufacturer's original and unopened containers. Discard lime if containers have been damaged or have been opened for more than two days.
- E. Store sand where grading and other required characteristics can be maintained and contamination avoided.
- F. Handle bricks to prevent overstressing, chipping, defacement, and other damage.

1.12 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit unit masonry restoration work to be performed according to product manufacturers' written instructions and specified requirements.
- B. Clean masonry surfaces only when air temperature is 50 deg F and above and is predicted to remain so for at least seven days after completion of cleaning.
- C. Cold-Weather Requirements: Comply with the following procedures for masonry reconstruction and pointing unless otherwise indicated:
 - 1. When air temperature is below 40 deg F, heat mortar ingredients, masonry reconstruction materials, mortar ingredients, and existing masonry walls to produce temperatures between 40 and 120 deg F.
 - 2. When mean daily air temperature is below 40 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for seven days after reconstruction and pointing.

- D. Hot-Weather Requirements: Protect masonry reconstruction areas and mortar-joint pointing when temperature and humidity conditions produce excessive evaporation of water from mortar and reconstruction materials. Provide artificial shade and wind breaks and use cooled materials as required to minimize evaporation. Do not apply mortar to substrates with temperatures of 90 deg F and above unless otherwise indicated.
- E. For manufactured reconstruction materials, perform work within the environmental limits set by each manufacturer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Source Limitations: Obtain each type of material for restoring brick masonry (brick, cement, sand, etc.) from single source with resources to provide materials of consistent quality in appearance and physical properties, unless otherwise indicated.

2.2 CLEANING MATERIALS

- A. Water: Potable.
- B. Hot Water: Water heated to a temperature of 140 to 160 deg F.
- C. Detergent Solution, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 1/2 cup of laundry detergent, and 20 quarts of hot water for every 5 gal. of solution required.
- D. Mold, Mildew, and Algae Remover, Job Mixed: Solution prepared by mixing 2 cups of tetrasodium pyrophosphate (TSPP), 5 quarts of 5 percent sodium hypochlorite (bleach), and 15 quarts of hot water for every 5 gal. of solution required.
- E. Nonacidic Gel Cleaner: Manufacturer's standard gel formulation, with pH between 6 and 9, that contains detergents with chelating agents and is specifically formulated for cleaning masonry surfaces.
 - 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. Cathedral Stone Products, Inc.; CSP Light Duty Cleaner.
 - b. PROSOCO, Inc.; Sure Klean 942 Limestone & Marble Cleaner.
- F. Nonacidic Liquid Cleaner: Manufacturer's standard mildly alkaline liquid cleaner formulated for removing mold, mildew, and other organic soiling from ordinary building materials, including polished stone, brick, aluminum, plastics, and wood.

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. Cathedral Stone Products, Inc.; CSP Bio-Cleaner.
 - b. PROSOCO, Inc.; Enviro Klean 2010 All Surface Cleaner.

2.3 MASONRY MATERIALS

- A. Refer to Division 04 Section "Unit Masonry" for Face Brick as required to complete brick masonry reconstruction work.

2.4 MORTAR MATERIALS

- A. Refer to Division 04 Section "Unit Masonry" for Mortar Materials as required to complete brick masonry reconstruction work.

2.5 ACCESSORY MATERIALS

- A. Liquid Strippable Masking Agent: Manufacturer's standard liquid, film-forming, strippable masking material for protecting glass, metal, glazed masonry, and polished stone surfaces from damaging effects of masonry cleaners.
 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. American Building Restoration Products, Inc.; ABR Rubber Mask.
 - b. PROSOCO, Inc.; Sure Klean Strippable Masking.
- B. Masonry Reconstruction Anchors, Expansion Type: Type 304 stainless-steel rods with brass expanding shells, length as required, for anchoring veneer to existing walls; providing positive mechanical anchorage to secure veneer to backing.
 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. Hohmann & Barnard, Inc.; Torq-Lok 510 Series Anchor.
- C. Masonry Reconstruction Anchors, Spiral Type: Type 304 stainless steel spiral rods 10 mm in diameter, length as required, for anchoring veneer to existing walls; driven-in anchors for installation in drilled holes, relying on screw effect, rather than adhesive to secure veneer to backing.
 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. Heckmann Building Products, Div. of Mechanical Plastics Corp.; Helix Remedial Tie (391).
 - b. Hohmann & Barnard, Inc.; Spira-Lok.

- D. Setting Buttons and Shims: Resilient plastic, nonstaining to masonry, sized to suit joint thicknesses and bed depths of bricks, less the required depth of pointing materials unless removed before pointing.
- E. Masking Tape: Nonstaining, nonabsorbent material; compatible with mortar, joint primers, sealants, and surfaces adjacent to joints; and that easily comes off entirely, including adhesive.
- F. Flexible Flashing: Use the following unless otherwise indicated:
 - 1. Refer to Division 04 Section "Unit Masonry" for Flexible Flashing products and accessories required to complete brick restoration work.
- G. Weep Products: Use the following unless otherwise indicated:

Refer to Division 04 Section "Unit Masonry" for Weep Products and accessories as required to complete brick masonry restoration work.
- H. Other Products: Select materials and methods of use based on the following, subject to approval of a mockup:
 - 1. Previous effectiveness in performing the work involved.
 - 2. Minimal possibility of damaging exposed surfaces.
 - 3. Consistency of each application.
 - 4. Uniformity of the resulting overall appearance.
 - 5. Do not use products or tools that could leave residue on surfaces.

2.6 MORTAR MIXES

- A. Measurement and Mixing: Measure cementitious materials and sand in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean, mechanical batch mixer.
 - 1. Mixing Pointing Mortar: Thoroughly mix cementitious materials and sand together before adding any water. Then mix again, adding only enough water to produce a damp, unworkable mix that retains its form when pressed into a ball. Maintain mortar in this dampened condition for 15 to 30 minutes. Add remaining water in small portions until mortar reaches desired consistency. Use mortar within one hour of final mixing; do not retemper or use partially hardened material.
- B. Mortar: Produce mortar of color required by using specified ingredients. Do not alter specified proportions without Architect's approval.
- C. Do not use admixtures in mortar unless otherwise indicated.
- D. Mixes: Mix mortar materials in the following proportions:
 - 1. Rebuilding (Setting) Mortar:
 - a. By Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.

2. Pointing Mortar:

- a. By Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.

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.
- B. Use the gentlest means to perform the Work and take the greatest of care to ensure materials are not damaged in the course of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PROTECTION

- A. Comply with each manufacturer's written instructions for protecting building and other surfaces against damage from exposure to its products. Prevent chemical cleaning solutions from coming into contact with people, motor vehicles, landscaping, buildings, and other surfaces that could be harmed by such contact.
 1. Cover adjacent surfaces with materials that are proven to resist chemical cleaners used unless products being used will not damage adjacent surfaces. Use protective materials that are waterproof and UV resistant. Apply masking agents according to manufacturer's written instructions. Do not apply liquid strippable masking agent to painted or porous surfaces. When no longer needed, promptly remove masking to prevent adhesive staining.
 2. Do not apply chemical solutions during winds of enough force to spread them to unprotected surfaces.
 3. Neutralize alkaline and acid wastes before disposal.
 4. Dispose of runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- B. Prevent mortar from staining face of surrounding masonry and other surfaces.
 1. Cover sills, ledges, and other projecting items to protect them from mortar droppings.
 2. Keep wall area wet below restoration work to discourage mortar from adhering.
 3. Immediately remove mortar splatters in contact with exposed masonry and other surfaces.

3.3 CLEANING MASONRY, GENERAL

- A. Cleaning Appearance Standard: Cleaned surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.
- B. Proceed with cleaning in an orderly manner; work from top to bottom of each scaffold width and from one end of each elevation to the other. Ensure that dirty residues and rinse water do not wash over dry, cleaned surfaces.
- C. Use only those cleaning methods indicated for each masonry material and location.
 - 1. Brushes: Do not use wire brushes or brushes that are not resistant to chemical cleaner being used.
 - 2. Spray Equipment: Use spray equipment that provides controlled application at volume and pressure indicated, measured at nozzle. Adjust pressure and volume to ensure that cleaning methods do not damage surfaces, including joints.
 - a. Equip units with pressure gages.
 - b. For chemical-cleaner spray application, use low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with nozzle having a cone-shaped spray.
 - c. For water-spray application, use fan-shaped spray that disperses water at an angle of 25 to 50 degrees.
 - d. For heated water-spray application, use equipment capable of maintaining temperature between 140 and 160 deg F at flow rates indicated.
- D. Perform each cleaning method indicated in a manner that results in uniform coverage of all surfaces, including corners, moldings, and interstices, and that produces an even effect without streaking or damaging masonry surfaces. Keep wall wet below area being cleaned to prevent streaking from runoff.
- E. Perform additional general cleaning, paint and stain removal, and spot cleaning of small areas that are noticeably different when viewed according to the "Cleaning Appearance Standard" Paragraph, so that cleaned surfaces blend smoothly into surrounding areas.
- F. Water Application Methods:
 - 1. Water-Soak Application: Soak masonry surfaces by applying water continuously and uniformly to limited area for time indicated. Apply water at low pressures and low volumes in multiple fine sprays using perforated hoses or multiple spray nozzles. Erect a protective enclosure constructed of polyethylene sheeting to cover area being sprayed.
 - 2. Water-Spray Applications: Unless otherwise indicated, hold spray nozzle at least 6 inches from masonry surface and apply water in horizontal back-and-forth sweeping motion, overlapping previous strokes to produce uniform coverage.

- G. Chemical-Cleaner Application Methods: Apply chemical cleaners to masonry surfaces according to chemical-cleaner manufacturer's written instructions; use brush or spray application. Do not spray apply at pressures exceeding 50 psi. Do not allow chemicals to remain on surface for periods longer than those indicated or recommended in writing by manufacturer.
- H. Rinse off chemical residue and soil by working upward from bottom to top of each treated area at each stage or scaffold setting. Periodically during each rinse, test pH of rinse water running off of cleaned area to determine that chemical cleaner is completely removed.
 - 1. Apply neutralizing agent and repeat rinse if necessary to produce tested pH of between 6.7 and 7.5.
- I. After cleaning is complete, remove protection no longer required. Remove tape and adhesive marks.

3.4 PRELIMINARY CLEANING

- A. Removing Plant Growth: Completely remove visible plant, moss, and shrub growth from masonry surfaces. Carefully remove plants, creepers, and vegetation by cutting at roots and allowing remaining growth to dry as long as possible before removal. Remove loose soil and plant debris from open joints to whatever depth they occur.
- B. Preliminary Cleaning: Before beginning general cleaning, remove extraneous substances that are resistant to planned cleaning methods. Extraneous substances include paint, calking, asphalt, and tar.
 - 1. Carefully remove heavy accumulations of rigid materials from masonry surface with sharp chisel. Do not scratch or chip masonry surface.

3.5 CLEANING MASONRY

- A. Hot-Water Wash: Use hot water applied by low-pressure spray.
- B. Detergent Cleaning:
 - 1. Wet surface with hot water applied by low-pressure spray.
 - 2. Scrub surface with detergent solution using medium-soft brushes until soil is thoroughly dislodged and can be removed by rinsing. Use small brushes to remove soil from mortar joints and crevices. Dip brush in solution often to ensure that adequate fresh detergent is used and that surface remains wet.
 - 3. Rinse with hot water applied by low-pressure spray to remove detergent solution and soil.
 - 4. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.
- C. Mold, Mildew, and Algae Removal:
 - 1. Wet surface with hot water applied by low-pressure spray.

2. Apply mold, mildew, and algae remover by brush or low-pressure spray.
3. Scrub surface with medium-soft brushes until mold, mildew, and algae are thoroughly dislodged and can be removed by rinsing. Use small brushes for mortar joints and crevices. Dip brush in mold, mildew, and algae remover often to ensure that adequate fresh cleaner is used and that surface remains wet.
4. Rinse with hot water applied by low-pressure spray to remove mold, mildew, and algae remover and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup.

D. Nonacidic Gel Chemical Cleaning:

1. Apply gel cleaner in 1/8-inch thickness by brush, working into joints and crevices. Apply quickly and do not brush out excessively, so area is uniformly covered with fresh cleaner and dwell time is uniform throughout area being cleaned.
2. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
3. Remove bulk of gel cleaner.
4. Rinse with hot water applied by low-pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

E. Nonacidic Liquid Chemical Cleaning:

1. Wet surface with hot water applied by low-pressure spray.
2. Apply cleaner to surface in two applications by brush or low-pressure spray.
3. Let cleaner remain on surface for period recommended in writing by chemical-cleaner manufacturer.
4. Rinse with hot water applied by low-pressure spray to remove chemicals and soil.
5. Repeat cleaning procedure above where required to produce cleaning effect established by mockup. Do not repeat more than once.

3.6 MASONRY RECONSTRUCTION, GENERAL

- A. Appearance Standard: Reconstructed surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.

3.7 BRICK REMOVAL AND REPLACEMENT

- A. At locations indicated, remove bricks that are damaged, spalled, or deteriorated. Carefully remove entire units from joint to joint, without damaging surrounding masonry, in a manner that permits replacement with full-size units.

1. When removing single bricks, remove material from center of brick and work toward outside edges.
- B. Support and protect remaining masonry that surrounds removal area.
- C. Maintain flashing, reinforcement, lintels, and adjoining construction in an undamaged condition.
- D. Notify Architect of unforeseen detrimental conditions including voids, cracks, bulges, and loose units in existing masonry backup, rotted wood, rusted metal, and other deteriorated items.
- E. Remove in an undamaged condition as many whole bricks as possible.
 1. Remove mortar, loose particles, and soil from brick by cleaning with hand chisels, brushes, and water.
 2. Remove sealants by cutting close to brick with utility knife and cleaning with solvents.
 3. Deliver cleaned brick not required for reuse to Owner unless otherwise indicated.
- F. Clean masonry surrounding removal areas by removing mortar, dust, and loose particles in preparation for brick replacement.
- G. Replace removed damaged brick with new brick matching existing brick.
- H. Install replacement brick into bonding and coursing pattern of existing brick. If cutting is required, use a motor-driven saw designed to cut masonry with clean, sharp, unchipped edges.
 1. Maintain joint width for replacement units to match existing joints.
 2. Use setting buttons or shims to set units accurately spaced with uniform joints.
- I. Lay replacement brick with rebuilding (setting) mortar and with completely filled bed, head, and collar joints. Butter ends with enough mortar to fill head joints and shove into place. Wet both replacement and surrounding bricks that have ASTM C67 initial rates of absorption (suction) of more than 30 g/30 sq. in. per min. Use wetting methods that ensure that units are nearly saturated but surface is dry when laid.
 1. Tool exposed mortar joints in reconstructed areas to match joints of surrounding existing brickwork.
 2. Rake out mortar used for laying brick before mortar sets according to Article "Repointing." Point at same time as repointing of surrounding area.
 3. When mortar is hard enough to support units, remove shims and other devices interfering with pointing of joints.
- J. Curing: Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
 1. Hairline cracking within the mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.

3.8 REANCHORING VENEERS

- A. Anchor masonry veneers to concrete and masonry backup with masonry reconstruction anchors to comply with the following requirements:
 - 1. Install in horizontal mortar joints and according to manufacturer's written instructions.
 - 2. Space anchors as indicated, but not more than 16 inches o.c. vertically and 32 inches o.c. horizontally.
 - 3. Install at locations to avoid penetrating flashing.
 - 4. Recess anchors at least 5/8 inch from surface of mortar joint and fill recess with pointing mortar.

3.9 FLASHING AND WEEP HOLES

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 - 2. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 12 inches, and at least 6 inches above the top of the cavity drainage material. Refer to Division 04 Section "Unit Masonry" for flashings, cavity drainage materials and accessories. Fasten upper edge of flexible flashing to sheathing through termination bar.
 - 3. Apply a continuous bead of compatible sealant to the top of the termination bar.
 - 4. At lintels and shelf angles, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
 - 5. Cut flexible flashing off flush with face of wall after masonry wall construction is completed.
- C. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.
 - 1. Use specified weep products to form weep holes.
 - 2. Space weep holes 24 inches o.c. unless otherwise indicated.

3.10 MASONRY REPOINTING, GENERAL

- A. Appearance Standard: Repointed surfaces are to have a uniform appearance as viewed from 20 feet away by Architect.

3.11 REPOINTING

- A. Rake out and repoint joints to the following extent:
 - 1. All joints in areas indicated.
 - 2. Joints at locations of the following defects:
 - a. Holes and missing mortar.
 - b. Cracks that can be penetrated 1/4 inch or more by a knife blade 0.027 inch thick.
 - c. Cracks 1/8 inch or more in width and of any depth.
 - d. Hollow-sounding joints when tapped by metal object.
 - e. Eroded surfaces 1/4 inch or more deep.
 - f. Deterioration to point that mortar can be easily removed by hand, without tools.
 - g. Joints filled with substances other than mortar.
- B. Do not rake out and repoint joints where not required.
- C. Rake out joints as follows, according to procedures demonstrated in approved mockup:
 - 1. Remove mortar from joints to depth of joint width plus 1/8 inch, but not less than 1/2 inch and not less than that required to expose sound, unweathered mortar. Do not remove unsound mortar more than 2 inches deep; consult Architect for direction.
 - 2. Remove mortar from brick and other masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum, or flush joints to remove dirt and loose debris.
 - 3. Do not spall edges of brick or other masonry units or widen joints. Replace or patch damaged brick or other masonry units as directed by Architect.
 - a. Cut out mortar by hand with chisel and resilient mallet. Do not use power-operated grinders without Architect's written approval.
- D. Notify Architect of unforeseen detrimental conditions including voids in mortar joints, cracks, loose masonry units, rotted wood, rusted metal, and other deteriorated items.
- E. Pointing with Mortar:
 - 1. Rinse joint surfaces with water to remove dust and mortar particles. Time rinsing application so, at time of pointing, joint surfaces are damp but free of standing water. If rinse water dries, dampen joint surfaces before pointing.
 - 2. Apply pointing mortar first to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8 inch until a uniform depth is formed. Fully compact each layer and allow it to become thumbprint hard before applying next layer.

3. After deep areas have been filled to same depth as remaining joints, point joints by placing mortar in layers not greater than 3/8 inch. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing masonry units have worn or rounded edges, slightly recess finished mortar surface below face of masonry to avoid widened joint faces. Take care not to spread mortar beyond joint edges onto exposed masonry surfaces or to featheredge the mortar.
 4. When mortar is thumbprint hard, tool joints to match original appearance of joints as demonstrated in approved mockup. Remove excess mortar from edge of joint by brushing.
 5. Cure mortar by maintaining in thoroughly damp condition for at least 72 consecutive hours, including weekends and holidays.
 6. Hairline cracking within mortar or mortar separation at edge of a joint is unacceptable. Completely remove such mortar and repoint.
- F. Where repointing work precedes cleaning of existing masonry, allow mortar to harden at least 30 days before beginning cleaning work.

3.12 FINAL CLEANING

- A. After mortar has fully hardened, thoroughly clean exposed masonry surfaces of excess mortar and foreign matter; use wood scrapers, stiff-nylon or -fiber brushes, and clean water applied by low-pressure spray.
1. Do not use metal scrapers or brushes.
 2. Do not use acidic or alkaline cleaners.
- B. Clean adjacent nonmasonry surfaces. Use detergent and soft brushes or cloths.
- C. Clean mortar and debris from roof; remove debris from gutters and downspouts. Rinse off roof and flush gutters and downspouts.
- D. Remove masking materials, leaving no residues that could trap dirt.
- E. Sweep and rake adjacent pavement and grounds to remove mortar and debris. Where necessary, pressure wash pavement surfaces to remove mortar, dust, dirt, and stains.

3.13 FIELD QUALITY CONTROL

- A. Architect's Project Representatives: Architect will assign Project representatives to help carry out Architect's responsibilities at the site, including observing progress and quality of portion of the Work completed. Allow Architect's Project representatives use of lift devices and scaffolding, as needed, to observe progress and quality of portion of the Work completed.

- B. Notify Architect's Project representatives in advance of times when lift devices and scaffolding will be relocated. Do not relocate lift devices and scaffolding until Architect's Project representatives have had reasonable opportunity to make inspections and observations of work areas at lift device or scaffold location.

END OF SECTION 04 01 20.19

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Concrete masonry units.
2. Concrete building brick.
3. Pre-faced concrete masonry units
4. Face brick.
5. Building (common) brick.
6. Mortar and grout.
7. Steel reinforcing bars.
8. Masonry-joint reinforcement.
9. Ties and anchors.
10. Embedded flashing.
11. Miscellaneous masonry accessories.

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 PREINSTALLATION MEETINGS

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

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1. CMUs.
2. Concrete building brick.
3. Face brick.
4. Building (common) brick.
5. Portland cement.
6. Colored cement products.
7. Aggregate for mortar.
8. Masonry-joint reinforcement for single-wythe masonry.
9. Individual wire ties.
10. Joint stabilization anchors.
11. Adjustable masonry-veneer anchors.
12. Adhesives, primers, and seam tapes for flashings.
13. Proprietary cleaner.

B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:

1. Face brick.
2. Pre-faced concrete masonry units
3. Water-repellent admixture.
4. Flexible flashing.
5. Drip plate flashing.
6. Termination bars for flexible flashing.
7. Compressible filler.
8. Preformed control-joint gaskets.
9. Weep/cavity vent products.
10. Cavity drainage material.

C. Samples for Initial Selection:

1. Pre-faced concrete masonry units
2. Face brick, in the form of portable display panels.
3. Colored mortar.

D. Samples for Verification: For each type and color of the following:

1. Pre-faced concrete masonry units
2. Face brick, in the form of straps of five or more bricks.
3. Pigmented mortar. Make Samples using same sand and mortar ingredients to be used on Project.

1.7 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of the following:

1. Masonry units.
 - a. Include material test reports substantiating compliance with requirements.
 - b. For brick, include size-variation data verifying that actual range of sizes falls within specified tolerances.
 - c. For exposed brick, include test report for efflorescence according to ASTM C67.
 - d. For masonry units, include data and calculations establishing average net-area compressive strength of units.
2. Integral water repellent used in CMUs.
3. Cementitious materials. Include name of manufacturer, brand name, and type.
4. Water-repellent admixture used in mortar.
5. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.
6. Grout mixes. Include description of type and proportions of ingredients.
7. Reinforcing bars.
8. Low-alloy steel reinforcing bars.
9. Joint reinforcement.
10. Anchors, ties, and metal accessories.

B. Mix Designs: For each type of mortar and grout. Include description of type and proportions of ingredients.

1. Include test reports, according to ASTM C1019, for grout mixes required to comply with compressive strength requirement.

C. 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.

1.8 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.

1.9 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.
 - 2. Where one wythe of multiwythe masonry walls is completed in advance of other wythes, secure cover a minimum of 24 inches down face next to unconstructed wythe, and hold cover 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.
 - 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.

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 unit masonry that develops indicated net-area compressive strengths at 28 days.
 - 1. Determine net-area compressive strength of masonry from average net-area compressive strengths of masonry units and mortar types (unit-strength method) according to TMS 602.

2.3 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602, 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 and will be within 20 feet vertically and horizontally of a walking surface.
- 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 bullnose 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 2000 psi.
2. Density Classification: Lightweight unless otherwise indicated.
3. Size (Width): Manufactured to dimensions 3/8 inch less than nominal dimensions.
4. Exposed Faces: Provide uniform fine texture units suitable for painting.

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: Lightweight.
3. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long.

D. Pre-faced CMUs - GBU: Lightweight solid concrete units complying with ASTM C90, with manufacturer's standard smooth resinous facing complying with ASTM C744.

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Echelon; Trenwyth Masonry Blocks, Astra-Glaze-SW+.
2. SpectraGlaze ; Spectra-Glaze II. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of 2150 psi.
3. Size: Manufactured to dimensions specified in "CMUs" Paragraph but with pre-faced surfaces having 1/16-inch-wide returns of facing to create 1/4-inch-wide mortar joints with modular coursing.
4. Colors and Patterns: As selected by Architect from manufacturer's full range. To match adjacent surfaces at Copper Beech Middle School.

2.5 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.
2. Provide special shapes for applications where stretcher units cannot accommodate special conditions, including those at corners, movement joints, bond beams, sashes, and lintels.
3. Provide special shapes for applications requiring brick of size, form, color, and texture on exposed surfaces that cannot be produced by sawing.
4. Provide special shapes for applications where shapes produced by sawing would result in sawed surfaces being exposed to view.

B. Face Brick: Facing brick complying with ASTM C216.

1. Basis-of-Design Product: Subject to compliance with requirements, provide the following products, or comparable products distributed by Bock Brick, East Syracuse, NY:
 - a. Lakeland High School:
 - 1) Glen-Gery Brick Company, Wyomissing, PA; Pittsburgh Plant, "200 Flashed Matt," Red Essentials Series.
2. Grade: SW.
3. Type: FBX.
4. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested according to ASTM C67.
5. Efflorescence: Provide brick that has been tested according to ASTM C67 and is rated "not effloresced."
6. Size (Actual Dimensions): 3-5/8 inches wide by 2-1/4 inches high by 7-5/8 inches long match existing, vif.
7. Application: Use where brick is exposed unless otherwise indicated.
8. Where shown to "match existing" provide face brick matching color range, texture, and size of existing adjacent brickwork.

C. Building (Common) Brick: ASTM C62, Grade SW.

1. Size: Match size of face brick.
2. Application: Use where brick is indicated for concealed locations.

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. Mixes: Mix masonry restoration mortar materials in the following proportions:
1. Rebuilding (Setting) Mortar:
 - a. By Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.
 2. Pointing Mortar:
 - a. By Type: ASTM C270, Proportion Specification, Type N unless otherwise indicated; with cementitious material limited to Portland cement and lime.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C979/C979M. Use only pigments with a record of satisfactory performance in masonry mortar.
- F. 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. Formulate blend as required to produce color indicated.
 - a. Color: To match existing, vif.
 2. Pigments shall not exceed 10 percent of portland cement by weight.
- G. 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.
- H. Aggregate for Grout: ASTM C404.
- I. Water: Potable.

2.7 REINFORCEMENT

- A. Masonry-Joint Reinforcement, General: ASTM A951/A951M.
1. Interior Walls: Mill- galvanized carbon steel.
 2. Exterior Walls: Stainless steel.
 3. Wire Size for Side Rods: 0.148-inch diameter (9 gage).
 4. Wire Size for Cross Rods: 0.148-inch diameter (9 gage).
 5. Wire Size for Veneer Ties: 0.187-inch diameter.
 6. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than 16 inches o.c.
 7. Provide in lengths of not less than 10 feet, with prefabricated corner and tee units.

- B. Masonry-Joint Reinforcement for Single-Wythe Masonry: Horizontal ladder or truss type with single pair of side rods.

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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Ladder-Type Masonry Wall Reinforcement (1100).
 - b. Hohmann & Barnard, Inc.; 220 Ladder Mesh Reinforcement or 120 Truss-Mesh.
 - c. Wire-Bond; Series 200 Ladder Mesh or 300 Truss Mesh 2 Wire.

2.8 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:

1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A82/A82M, with ASTM A153/A153M, Class B-2 coating.
2. Stainless Steel Wire: ASTM A580/A580M, Type 304.
3. Steel Sheet, Galvanized after Fabrication: ASTM A1008/A1008M, Commercial Steel, with ASTM A153/A153M, Class B coating.
4. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.

- C. Individual Wire Ties: Rectangular units with closed ends and not less than 4 inches wide.

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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Double Eye Rod Anchor (262) and Double Pintle Tie (263).
 - b. Hohmann & Barnard, Inc.; Adjustable Wall Ties (Pintles & Eyes).
2. Where wythes do not align or are of different materials, use adjustable ties with pintle-and-eye connections having a maximum adjustment of 1-1/4 inches.
3. Wire: Fabricate from 3/16-inch-diameter, stainless steel wire.

- D. Anchors for Connecting CMU to Existing Masonry: Corrugated strips formed from 0.062-inch-thick (16 gage) stainless-steel sheet, 1-1/4 inch wide, with 1-1/2 inch bend.

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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; #187 Hole-Type Brick Veneer Anchor.
 - b. Wire-Bond; #2501 Veneer Anchor Corrugated.

- E. Joint Stabilization Anchors: Provide anchors that bond masonry walls across expansion and control joints while allowing lateral movement, made from stainless-steel.
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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Control Joint Anchor (353).
 - b. Hohmann & Barnard, Inc.; Slip-Set Stabilizer.
 - c. Wire-Bond; #1700 Control Joint Anchor.
- F. Adjustable Masonry-Veneer Anchors:
1. General: Provide anchors that allow vertical adjustment but resist a 100-lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
 2. Fabricate wire ties from 0.187-inch- diameter, stainless steel wire unless otherwise indicated.
 3. Screw-Attached, Thermally-Isolated, Masonry-Veneer Anchors: Wire tie and a corrosion-resistant, self-drilling, barrel screw designed to receive wire tie. Barrel has gasketed washer head that covers hole in insulation.
 - 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) Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Original Pos-I-Tie Veneer Anchoring Clip (75), Pos-I-Tie ThermalClip (75TC), and Pintle Wire Tie for ThermalClip (282-N).
 - 2) Hohmann & Barnard, Inc.; Thermal 2-Seal Wing Nut Anchor and Adjustable Wall Ties (pintle).
 - 3) Wire-Bond; #4522 SureTie WS, #4590 Thermal Grip Washer, and #4515 SureTie Double Hook.

2.9 EMBEDDED FLASHING MATERIALS

- A. Flexible Flashing: Use the following unless otherwise indicated:
1. Copper-Laminated Flashing: 7-oz./sq. ft. copper sheet bonded between two layers of glass-fiber cloth/polymer fabric; non-asphaltic type. Use only where flashing is fully concealed in masonry.
 - 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) Advanced Building Products, Inc.; Copper Sealtite 2000.
 - 2) Wire-Bond; Copper Seal (Copper Fabric Flashing) #4140.
 - 3) York Manufacturing, Inc.; Multi-Flash 500.

- B. Drip Plate Flashing: Fabricate from copper to shape indicated, including inside corners, outside corners, and end dams. Provide hemmed edge drip plate flashing materials with foam seal and adhesive strip as follows:
1. Basis-of-Design Product: Subject to compliance with requirements, provide Hohmann & Barnard, Inc.; FTS Series Drip Plate or comparable product.
 2. Width: Not less than 3 inches.
 3. Copper: 16-oz./sq. ft.
- C. Single-Wythe CMU Flashing System: System of CMU cell flashing pans and interlocking CMU web covers made from UV-resistant, high-density polyethylene. Cell flashing pans have integral weep spouts designed to be built into mortar bed joints and that extend into the cell to prevent clogging with mortar.
1. Basis-of-Design Product: Subject to compliance with requirements, provide Mortar Net Solutions; BlockFlash or comparable product.
- D. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.
- E. Termination Bars for Flexible Flashing: Stainless steel bars not less than 1/8 inch by 1 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. Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Termination Bar (1050).
 - b. Hohmann & Barnard, Inc.; T1 - Termination Bar.
 - c. Wire-Bond; #4200 Termination Bar.

2.10 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.
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. Hohmann & Barnard, Inc.; NS – Closed Cell Neoprene Sponge.
 - b. Wire-Bond; #3300 Expansion Joint.
- 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.
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. Hohmann & Barnard, Inc.; RS Series – Rubber Control Joint.
 - b. Wire-Bond; Rubber Control Joint.

C. Weep/Cavity Vent Products: Use the following unless otherwise indicated:

1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.
 - 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) Advanced Building Products, Inc.; Mortar Maze Weep Vents.
 - 2) Heckmann Building Products Inc., Div. of Mechanical Plastics Corp.; Cell Vent (85).
 - 3) Hohmann & Barnard, Inc.; QV – Quadro-Vent.
 - 4) Wire-Bond; #3601 Cell Vent.

D. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

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. Hohmann & Barnard, Inc.; Mortar Trap.
 - b. Mortar Net Solutions; WallDefender.
 - c. Wire-Bond; Cavity Net DT.
2. Configuration: Provide one of the following:
 - a. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.

2.11 MASONRY CLEANERS

- A. Proprietary Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.
 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. Prosoco, Inc.

2.12 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.

- 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.
 - 1. For concrete masonry unit backup in exterior walls, masonry bearing walls, shear walls and masonry below grade or in contact with earth, use Type S. Not for use in masonry veneer construction.
 - 2. Use Type N mortar in all masonry veneer construction and in all masonry construction other than noted in the requirements for Type S mortar above.
- D. Pigmented Mortar: Use colored cement product.
 - 1. Application: Use pigmented mortar for exposed mortar joints with the following units:
 - a. Pre-faced CMUs
 - b. Face brick.
- E. 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 for dimensions of grout spaces and pour height.
 - 2. Proportion grout in accordance with ASTM C476, 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. Verify that foundations are within tolerances specified.
 - 2. Verify that reinforcing dowels are properly placed.
 - 3. Verify that substrates are free of substances that impair mortar bond.
- B. Before installation, examine rough-in and built-in construction for piping systems to verify actual locations of piping connections.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

- A. Thickness: Build cavity and composite walls and other masonry construction to full thickness shown. Build single-wythe walls to actual widths of masonry units, using units of widths indicated.
- B. Build chases and recesses to accommodate items specified in this and other Sections.
- C. Leave openings for equipment to be installed before completing masonry. After installing equipment, complete masonry to match construction immediately adjacent to opening.
- D. 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.
- E. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- F. Matching Existing Masonry: Match coursing, bonding, color, and texture of existing masonry.
- G. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested according to ASTM C67. Allow units to absorb water so they are damp but not wet at time of laying.

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.

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. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8 inch.
5. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16 inch from one masonry unit to the next.

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. Match existing coursing, vif.
- C. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2 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. At fire-rated partitions, treat joint between top of partition and underside of structure above to comply with Division 07 Section "Joint Firestopping."

3.5 MORTAR BEDDING AND JOINTING

- A. Lay 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.
 - 5. Fully bed units and fill cells with mortar at anchors and ties as needed to fully embed anchors and ties in mortar.
- B. Lay solid masonry units 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 air barriers unless otherwise indicated.

3.6 CAVITY WALLS

- A. Bond wythes of cavity walls together using one of the following methods:
 - 1. Masonry-Joint Reinforcement: Installed in horizontal mortar joints.
 - a. Use adjustable-type (two-piece-type) reinforcement.
 - 2. Adjustable Masonry-Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity.

- C. Installing Cavity Wall Insulation: Place small dabs of adhesive, spaced approximately 12 inches o.c. both ways, on inside face of insulation boards, or attach with plastic fasteners designed for this purpose. Fit courses of insulation between wall ties and other confining obstructions in cavity, with edges butted tightly both ways. Press units firmly against inside wythe of masonry or other construction as shown.
 - 1. Fill cracks and open gaps in insulation with crack sealer compatible with insulation, air barrier, and masonry.

3.7 ANCHORED MASONRY VENEERS

- A. Anchor masonry veneers to wall framing and concrete and masonry backup with masonry-veneer anchors to comply with the following requirements:
 - 1. Fasten screw-attached anchors with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
 - 2. Embed tie sections in masonry joints.
 - 3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
 - 4. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.
- B. Provide not less than 2 inches of airspace between back of masonry veneer and face of insulation.
 - 1. Keep airspace clean of mortar droppings and other materials during construction. Bevel beds away from airspace, to minimize mortar protrusions into airspace.

3.8 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 parapet walls.
 - 3. Provide reinforcement not more than 8 inches above and below wall openings and extending 12 inches beyond openings in addition to continuous reinforcement.
- 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 returns, offsets, column fireproofing, pipe enclosures, and other special conditions.

3.9 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
 - 1. Provide an open space not less than 2 inches wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than 16 inches o.c. vertically and 16 inches o.c. horizontally.

3.10 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.
 - 1. Locate joints as indicated on Drawings; if not indicated, locate vertical joints not more than 24 feet o.c. for expansion joints in masonry veneer and not more than 20 feet o.c. for control joints in concrete masonry. Locate joints not more than 2 feet from building corners and locate joints above and below opening jambs.
- B. Form control joints in concrete masonry as follows:
 - 1. Install preformed control-joint gaskets designed to fit standard sash block.
 - 2. At steel columns, construct control-joint according to Drawings.
- C. Form expansion joints in brick as follows:
 - 1. Build in compressible joint fillers where indicated.
 - 2. Form open joint full depth of brick wythe and of width indicated, but not less than 3/8 inch for installation of sealant and backer rod specified in Division 07 Section "Joint Sealants."

3.11 LINTELS

- A. Install steel lintels where indicated.
- B. Provide 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.

3.12 FLASHING, WEEP HOLES, AND CAVITY VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 - 2. At masonry-veneer walls, extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 12 inches, and at least 6 inches above the top of the cavity drainage material or to height as recommended by cavity drainage material manufacturer. Fasten upper edge of flexible flashing to sheathing through termination bar.
 - 3. Apply a continuous bead of compatible sealant to the top of the termination bar.
 - 4. At lintels, extend flashing a minimum of 6 inches into masonry at each end. At heads and sills, extend flashing 6 inches at ends and turn up not less than 2 inches to form end dams.
 - 5. Install metal drip plate flashing beneath flexible flashing at exterior face of wall as recommended by manufacturer. Stop flexible flashing 1/2 inch back from outside face of wall and adhere flexible flashing to top of metal drip plate flashing.
- C. Install single-wythe CMU flashing system in bed joints of CMU walls where indicated to comply with manufacturer's written instructions. Install CMU cell pans with upturned edges located below face shells and webs of CMUs above and with weep spouts aligned with face of wall. Install CMU web covers so that they cover upturned edges of CMU cell pans at CMU webs and extend from face shell to face shell.
- D. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.
 - 1. Use specified weep/cavity vent products to form weep holes.
 - 2. Space weep holes 24 inches o.c. unless otherwise indicated.
- E. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- F. Install cavity vents in head joints in exterior wythes at 24 inches o.c. unless otherwise indicated. Use specified weep/cavity vent products to form cavity vents.
 - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.13 REINFORCED UNIT MASONRY

- A. Placing Reinforcement: Comply with requirements in TMS 602.
- B. 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 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.

3.14 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 2 in TMS 402.
 - 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. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C140 for compressive strength.
- D. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C780.
- E. Reinforcement Inspections: Inspect reinforcement for size and placement.
- F. Grout and Mortar Inspection: Inspect grout and mortar mixing operations to ensure mix proportions and procedures comply with specified requirements.
- G. Tie and Anchor Inspections: Inspect ties and anchors for type, spacing, and proper installation.
- H. Flashing and Accessories Inspections: Inspect flashing and accessories for type and proper installation.
- I. Cold-Weather and Hot-Weather Inspections: Inspect masonry construction operations for compliance with specified cold-weather and hot-weather procedures.

3.15 CORRECTING, 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. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
 - 4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
 - 5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 6. Clean concrete masonry by applicable cleaning methods indicated in NCMA TEK 8-4A.
 - 7. Clean masonry with a proprietary cleaner applied according to manufacturer's written instructions.

END OF SECTION 04 20 00

SECTION 05 12 00 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Structural steel.
 - 2. Primer.
 - 3. Non-Shrink Grout.

1.3 DEFINITIONS

- A. Structural Steel: Elements of structural-steel frame, as classified by AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.4 SUBMITTALS

- A. Action Submittals:
 - 1. Product Data: For each type of product indicated.
 - a. High-strength bolts, nuts and washers
 - b. Direct-tension indicators
 - c. Tension-control, high-strength bolt-nut-washer assemblies
 - d. Threaded rods
 - e. Post-installed Anchors
 - f. Galvanizing repair paint
 - g. Non-Shrink Grout
 - 2. Shop Drawings: Show fabrication of structural-steel components.
 - a. Embedded Item Layout Plans and Details: Show anchor rod layout, dimensions, elevation, orientation and details of anchor rods, leveling plates and other items embedded in concrete.
 - 1) Submit embedded item plans and obtain Architect's approval prior to submitting erection plans.

- b. Erection Plans and Details: Include member layout, dimensions, elevations, member sizes, erection details, and all information required for erection.
 - 1) Submit erection plans and obtain Architect's approval prior to submitting fabrication details.
- c. Fabrication Details: Submit drawings indicating all details necessary for shop fabrication and erection of each individual steel member.
 - 1) Detail simple shear connections to withstand loads indicated and comply with other information and restrictions indicated.
 - a) Select and complete connections using AISC 360 and LRFD.
 - b) Provide connections, at a minimum, sized for beam end reactions shown on Drawings and per Tables 10-1, 10-2, 10-3 or 10-4, AISC Steel Construction Manual. Unless otherwise noted, beam end reactions are given at factored load level.
 - 2) Include details of cuts, connections, splices, camber, holes, and other pertinent data.
 - 3) Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain.
 - 4) Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.

B. Informational Submittals:

- 1. Product Test Reports: For the following:
 - a. Bolts, nuts, and washers including mechanical properties and chemical analysis.
 - b. Direct-tension indicators.
 - c. Tension-control, high-strength bolt-nut-washer assemblies.
 - d. Non-shrink grout.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD is preferred. At least 10 projects completed of a similar size and scope to Project.
 - 1. If fabricator is not designated an AISC-Certified Plant, see Source Quality Control Article for Contractor responsibilities.

- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- C. Comply with applicable provisions of the following specifications and documents:
 - 1. AISC 303.
 - 2. AISC 360.
 - 3. RCSC's "Specification for Structural Joints Using ASTM A325 or A490 Bolts."

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - 1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.
 - 1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
 - 2. Clean and relubricate bolts and nuts that become dry or rusty before use.
 - 3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

1.7 COORDINATION

- A. Coordinate installation of anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

- A. W-Shapes: ASTM A 992/A 992M.
- B. Channels and Angles: ASTM A 572/A 572M, Grade 50.
- C. Plate and Bar: ASTM A 36/A 36M.
- D. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
- E. Steel Pipe: ASTM A 53/A 53M, Type E or S, Grade B.
- F. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

- A. High-Strength Bolts, Nuts, and Washers: ASTM F3125, Grade A490, Type 1, heavy-hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563, Grade DH, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers with plain finish.
 - 1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type with plain finish.
- B. Tension-Control, High-Strength Bolt-Nut-Washer Assemblies: ASTM F3125, Grade F1852, Type 1, heavy-hex head assemblies consisting of steel structural bolts with splined ends, ASTM A563, Grade DH heavy-hex carbon-steel nuts, and ASTM F436, Type 1, hardened carbon-steel washers with plain finish.
- C. Threaded Rods: ASTM A 36/A 36M.
 - 1. Nuts: ASTM A 563 heavy-hex carbon steel.
 - 2. Washers: ASTM F 436, Type 1, hardened carbon steel.
 - 3. Finish: Plain.
- D. Post-installed Anchors chemical anchors.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, 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 F 593, and nuts, ASTM F 594.
 - 3. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.
 - a. Products for anchoring into concrete and grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) DeWalt; AC200+.
 - 2) Hilti, Inc.; HIT-HY 200R; HIT-HY 200A; HIT-ICE.
 - 3) ITW Redhead; A7+.
 - b. Products for anchoring into masonry other than grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) DeWalt; AC200+.
 - 2) Hilti, Inc.; HIT-HY 270.
 - 3) ITW Redhead; A7+.

2.3 PRIMER

- A. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
- B. Provide primers that comply with Division 09 Section "High Performance Coatings" and the following:
- C. Interior Structural Steel: Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it and meeting ASTM A 780.

2.4 NON-SHRINK GROUT

- A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, shrinkage-resistant, nonmetallic aggregate grout, noncorrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
 - 1. Fabricate beams with rolling camber up.
 - 2. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.
 - 3. Mark and match-mark materials for field assembly.
- B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
 - 1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.
- C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces. Holes to be standard holes unless shown otherwise on Drawings.
- D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.
- E. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 3, "Power Tool Cleaning."
- F. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
 - 1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
 - 2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
 - 3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

- G. Architecturally Exposed Structural Steel: Fabricate to the requirements of AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

2.6 SHOP CONNECTIONS

- A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened or pretensioned and slip critical where indicated on Drawings.
- B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.7 SHOP PRIMING

- A. Shop prime the following structural steel members only:
 - 1. Interior structural steel exposed to view, and interior lintels.
- B. For members to receive primer leave following locations unprimed:
 - 1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
 - 2. Surfaces to be field welded.
 - 3. Surfaces to be high-strength bolted with slip-critical connections.
- C. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits.
 - 1. ASTM D 6386, "Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting," for galvanized surfaces noted to be painted.
- D. Priming:
 - 1. Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 2. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 3. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.8 GALVANIZING

- A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
 - 1. Fill vent and drain holes that will be exposed in the finished Work unless they will function as weep holes, by plugging with zinc solder and filing off smooth.

2.9 SOURCE QUALITY CONTROL

- A. Testing Agency: If fabricator is not designated an AISC-Certified Plant then the Contractor shall engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 - 1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Bolted Connections: Shop-bolted connections shall be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- D. Welded Connections: Shop welds will be visually inspected according to AWS D1.1/D1.1M.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - 1. Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

- B. Base Bearing and Leveling Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
 - 1. Set plates for structural members on wedges, shims, or setting nuts as required.
 - 2. Weld plate washers to top of baseplate.
 - 3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with non-shrink grout.
 - 4. Promptly pack non-shrink grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect non-shrink grout and allow to cure. Comply with manufacturer's written installation instructions for non-shrink grouts.
- C. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."
- D. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
 - 1. Level and plumb individual members of structure.
- E. Splice members only where indicated.
- F. Do not use thermal cutting during erection.
- G. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.
- H. Architecturally Exposed Structural Steel: Erect to the requirements of AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

3.3 FIELD CONNECTIONS

- A. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - 1. Joint Type: Snug tightened and slip critical where indicated on Drawings.
- B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
 - 1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances in AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform tests and inspections as described below.
- B. Bolted Connections: Bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- C. Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
- D. Post-installed Chemical Anchors: Test 5% of all chemical anchors in tension, randomly selected but in varied locations. Testing to be in accordance with ASTM E 488 to the approved manufacturer's allowable loads. Concrete or masonry wall must cure a minimum of 3 days prior to testing. Do not test anchors until after the anchor manufacturer's recommended curing time. If an anchor fails during this test additional anchors may be requested to be tested as directed by the Architect.
- E. Record position and alignment of erected steel. Compare with required tolerances.
- F. Verify compliance with details shown on approved drawings such as bracing, stiffening, member location, and proper application of joint details at each connection.
- G. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

3.5 REPAIRS AND PROTECTION

- A. Field Corrections: Do not field correct any framing member or connection without prior approval of Architect. Submit detail of proposed field correction to Architect including component sizes, dimensions, weld sizes, cut locations, etc.
- B. Galvanized Surfaces: Clean areas where galvanizing is damaged or missing and repair galvanizing to comply with ASTM A 780.

END OF SECTION 05 12 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

1. Steel framing and supports for operable partitions.
2. Steel framing and supports for mechanical and electrical equipment.
3. Steel framing and supports for applications where framing and supports are not specified in other Sections.
4. Metal ladders.
5. Metal ships' ladders. Miscellaneous steel trim.
6. Loose bearing and leveling plates for applications where they are not specified in other Sections.

1.3 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design ladders and ships' ladders, including comprehensive engineering analysis by a qualified professional engineer (licensed in the State of New York), using performance requirements and design criteria indicated and certifying that the design complies with the Building Code of New York.
- B. Structural Performance of Aluminum Ladders: Provide aluminum ladders and ships' ladders capable of withstanding applied design loads and all combinations of these loads, as required by applicable codes and as specified on Drawings, within limits and under conditions indicated.
 1. Aluminum ladders shall withstand the effects of loads and stresses within limits and under conditions specified in ANSI A14.3.
- C. 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.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Slotted channel framing.
 - 2. Metal nosings and treads.
 - 3. Grout.
- B. Shop Drawings: Show fabrication and installation details for metal fabrications.
 - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.
- C. Delegated-Design Submittal: For aluminum ladders and ships' ladders indicated to comply with performance requirements and design criteria, including structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - 2. AWS D1.2/D1.2M, "Structural Welding Code - Aluminum."

1.7 COORDINATION

- A. 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.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

- 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.

2.2 FERROUS METALS

- A. Steel Channels and Angles: ASTM A 572/A 572M, Grade 50.
- B. Steel Plates and Bars: ASTM A36/A36M.
- C. Stainless-Steel Sheet, Strip, and Plate: ASTM A240/A240M or ASTM A666, Type 304

- D. Stainless-Steel Bars and Shapes: ASTM A276, Type 304
- E. Steel Tubing: ASTM A500, 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 or as indicated on drawings.
 - 2. Material: Galvanized steel, ASTM A 653/A 653M, structural steel, Grade 33, with G90 coating; 0.108-inch nominal thickness.
 - 3. Fasteners and Fittings: Appropriate to situation and as recommend by manufacturer.

2.3 NONFERROUS METALS

- A. Aluminum Plate and Sheet: ASTM B209, Alloy 6061-T6.
- B. Aluminum Bar and Rod: ASTM B211, Alloy 6061-T6.
- C. Aluminum Extrusions: ASTM B221, Alloy 6061-T6.

2.4 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, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.
- B. Post-installed Anchors: chemical anchors.
 - 1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B633 or ASTM F1941, 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 F 593, and nuts, ASTM F 594.
 - 3. Chemical Anchor Adhesives: Heavy duty, two component injectable adhesive designed to be dispensed using double chamber gun with mixing nozzle. Adhesives in capsule form will not be accepted.
 - a. Products for anchoring into concrete and grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) DeWalt; AC200+.
 - 2) Hilti, Inc.; HIT-HY 200R; HIT-HY 200A HIT-ICE.
 - 3) ITW Redhead; A7+.
 - b. Products for anchoring into masonry other than grout-filled masonry: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) DeWalt; AC200+.

- 2) Hilti, Inc.; HIT-HY 270.
- 3) ITW Redhead; A7+.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Primer:
 1. VOC Content: Products shall comply with VOC limits of authorities having jurisdiction.
 2. Provide primers that comply with Division 09 Section "High Performance Coatings" and the following:
 - a. Interior Structural Steel: Refer to First Coat for Steel, Structural Steel in Interior High-Performance Coating Schedule: General Use.
 - b. Exposed Exterior Structural Steel: Refer to First Coat for Steel Substrates in Exterior High-Performance Coating Schedule.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with ASTM A780/A780M and compatible with paints specified to be used over it.
- D. Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- E. Concrete: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" for normal-weight, air-entrained, concrete with a minimum 28-day compressive strength of 3000 psi.
- F. Isolation Barrier Membrane: Self-adhering, high-temperature sheet, minimum 15 mils thick, consisting of cross-laminated polyethylene-film top surface laminated to layer of butyl adhesive, with release-liner backing; cold applied, in roll width to match or exceed width of area to be protected. Provide primer when recommended by membrane manufacturer.
 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. Grace Construction Products, a unit of W. R. Grace & Co.; "Vycor Pro".
 - b. Equivalents meeting requirements of specified products.

2.6 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.
- 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 will be 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.
 - 1. 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.

2.7 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. Fabricate supports for operable partitions from continuous steel beams of sizes indicated with attached bearing plates, anchors, and braces as recommended by partition manufacturer. Drill or punch bottom flanges of beams to receive partition track hanger rods; locate holes where indicated on operable partition Shop Drawings.

2.8 METAL LADDERS

A. General:

- 1. Comply with ANSI A14.3 unless otherwise indicated.
- 2. For elevator pit ladders, comply with ASME A17.1.

B. Aluminum Ladders:

- 1. Fabricators: Subject to compliance with requirements, available fabricators offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Roof Lines, waterfrontdocks@gmail.com
- 2. Space siderails 24 inches apart unless otherwise indicated.
- 3. Siderails: Continuous extruded-aluminum tubes, not less than 2-1/2 inches deep, 3/4 inch wide, and 1/8 inch thick.
- 4. Rungs: Solid knurled aluminum round bars, 1" inch in diameter.
- 5. Fit rungs in centerline of siderails; fasten by welding.
- 6. Support each ladder at top and bottom and not more than 48 inches o.c. with welded aluminum brackets. Brackets are to be 1/4 inch thick by 3 inches wide.
- 7. Top grab rails (for exterior): Extruded aluminum tube, not less than 1 inch in diameter, fully welded. Miter or radius all corners.
- 8. Top grab rails (for interior): Extend siderails past walking surface 42 inches at pits.
- 9. All connections to be fully welded continuous and ground smooth.
- 10. All open tube ends to be capped/sealed closed.

2.9 METAL SHIPS' LADDERS

- A. Provide metal ships' ladders where indicated. Fabricate of open-type construction with channel or plate stringers and pipe and tube railings unless otherwise indicated. Provide brackets and fittings for installation.

- 1. Fabricate ships' ladders, including railings from aluminum.

2. Fabricate treads and platforms from abrasive-surface floor plate.
3. Comply with applicable railing requirements in Division 05 Section "Tube Railings (Stainless Steel)."

2.10 MISCELLANEOUS STEEL TRIM

- A. Unless otherwise indicated, fabricate units from steel shapes, plates, and bars of profiles shown with continuously welded joints and smooth exposed edges. Miter corners and use concealed field splices where possible.
- B. Provide cutouts, fittings, and anchorages as needed to coordinate assembly and installation with other work.
 1. Provide with integrally welded steel strap anchors for embedding in concrete or masonry construction.

2.11 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.

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 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.
- C. 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. Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to Division 09 Section "High Performance Coatings".
 1. For galvanized surfaces noted to be painted, comply with ASTM D6386, "Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting".

- B. 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. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
- 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. Metal Fabrications: For all iron and steel items (except those noted below), shop prime with alkyd primer.
 - 2. Exterior Wall Metal Fabrications: For all iron and steel items occurring in exterior walls, shop prime with urethane primer.
 - 3. Exposed Exterior Metal Fabrications: For all iron and steel items exposed on the exterior shop prime with zinc-rich primer.
- D. Shop Priming: Immediately after surface preparation, apply one coat of primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness as listed below. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
 - 1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - 2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

2.15 ALUMINUM FINISHES

- A. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
- B. As-Fabricated Finish: AA-M10 (Mechanical Finish: as fabricated, unspecified).

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. 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.
- C. 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.

- D. 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.
- E. 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.
- F. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.
- G. Corrosion Protection: Protect concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with the following:
1. Isolation barrier membrane.

3.2 INSTALLING 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.
- B. Anchor supports for operable partitions securely to and rigidly brace from building structure.
- C. Install slotted channel framing with manufacturer recommended fasteners and fittings and follow manufacturer recommended instructions.

3.3 INSTALLING 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 grout.
 1. Use non-shrink, nonmetallic grout in exposed locations unless otherwise indicated.
 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.4 ADJUSTING AND CLEANING

- A. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint are specified in Division 09 Section "High-Performance Coatings."
- B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and restore galvanizing to comply with ASTM A780.

END OF SECTION 05 50 00

SECTION 05 52 13 - TUBE RAILINGS (STAINLESS STEEL)**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Stainless-steel tube railings.
 - 2. Stainless-steel fittings, brackets, and other railing accessories.

1.3 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 only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Stainless-steel tube.
 - 2. Fasteners.
 - 3. Railing brackets, flanges, fittings, and anchors.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
 - 1. Include sample radius bend and weld.

1.6 INFORMATIONAL SUBMITTALS

- A. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.
- B. Welding Qualifications: Qualify procedures and personnel according to the following:
 - 1. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."
- C. Shop Conditions: Maintain shop conditions in a clean manner to prevent contamination of stainless-steel surfaces.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. 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 minimum 1-1/2-inch clearance from inside face of handrail to finished wall surface.

2.3 STAINLESS STEEL

- A. Tubing: ASTM A269, Grade MT 316L.
- B. Castings: ASTM A743/A743M, Grade CF 8M or CF 3M.
- C. Sheet, Strip, Plate, and Flat Bar: ASTM A666, Type 316L.
- D. Bars and Shapes: ASTM A276, Type 316L.

2.4 FASTENERS

- A. General: Provide the following:
 - 1. Stainless-Steel Railings: Type 316 stainless-steel fasteners.
- 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 indicated 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 exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
 - 2. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.
 - 1. Material: Alloy Group 2 stainless-steel bolts, ASTM F593, and nuts, ASTM F594.

2.5 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
 - 1. For stainless-steel railings, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- B. Nonshrink, Nonmetallic Grout: Factory-packaged, nonexpanding, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

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. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. 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.
- 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. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded 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 surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Form Changes in Direction as Follows:
 - 1. As detailed.
 - 2. By radius bends of radius indicated or no greater than 4".
- J. 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.
- K. Close exposed ends of railing members with prefabricated end fittings.
- L. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns.

- M. Brackets, Flanges, Fittings, and Anchors: Provide stainless-steel wall brackets, flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.
1. Concealed Anchorage Brackets (Cast Type):
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Handrail Bracket 1729-2, or comparable product.
 - 1) Description: Cast round saddle with tapped mounting hole, brushed satin finish, Type 304.
 - a) Secure handrail to bracket with countersunk, tamper-resistant screws.
 2. Concealed Anchorage Brackets (Assembled Type):
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Handrail Bracket RB34125.4, or comparable product.
 - 1) Description: Round saddle with tapped mounting hole, high luster finish, Type 316L.
 - a) Secure handrail to bracket with countersunk, tamper-resistant screws.
 3. Flanges:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Heavy Base Flange 1537T, or comparable product.
 - 1) Description: Flange for level surface, high luster finish, Type 316L.
 - a) Secure base flange to vertical post with set screw.
 - b. Basis-of-Design Product: Subject to compliance with requirements, provide R & B Wagner, Inc.; Heavy Flush Base Flange 2606T, or comparable product.
 - 1) Description: Flange for level surface modified for angle, high luster finish, Type 316L.
 - a) Secure beveled base flange to substrate at angled post with construction adhesive.
 4. 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.
- N. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

- O. 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.
- P. Toe Boards: Where indicated, provide toe boards at railings around openings and at edge of open-sided floors and platforms. Fabricate to dimensions and details indicated.

2.7 STAINLESS-STEEL FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Remove tool and die marks and stretch lines, or blend into finish.
- C. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.
- D. Stainless Steel Tubing Finishes:
 - 1. 180-Grit Polished Finish: Uniform, directionally textured finish.
- E. Stainless Steel Sheet and Plate Finishes:
 - 1. Directional Satin Finish: ASTM A480/A480, No. 4.
- F. Passivating: When polishing is completed, passivate all surfaces, including areas sensitive to corrosion, including welded areas and adjacent heat-affected zones, perforated surfaces, etc. Follow passivating procedure established by standard industry best practices to thoroughly remove embedded foreign matter and leave surfaces chemically clean. Rinse thoroughly.

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.
- B. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. 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.
 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.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
- 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.

3.3 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components, unless otherwise indicated. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- B. 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. Apply bead of clear silicone to provide smooth transition at joint.

3.4 ANCHORING POSTS

- A. Use stainless-steel 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, mixed and placed to comply with anchoring material manufacturer's written instructions, in two applications.
- B. Leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.
- C. Anchor posts to metal surfaces with oval flanges, angle type, or floor type as required by conditions, connected to posts and to metal supporting members as indicated.

3.5 ATTACHING RAILINGS

- A. Return railing ends at walls to within 1/2 inch of wall; provide fully-welded end closure of railings, ground smooth.
- B. Return railing ends to posts; fully welded to posts, ground smooth.

- C. Attach railings to wall with wall brackets. Provide brackets with minimum 1-1/2 inch clearance from inside face of handrail and finished wall surface.
 - 1. Locate brackets as indicated or, if not indicated, at spacing required to support structural loads.
- D. 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, use self-tapping screws fastened to steel framing or to concealed steel reinforcements.
- E. Attach 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.

3.6 ADJUSTING AND CLEANING

- A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water and wiping dry.

3.7 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.
- B. Restore finishes damaged during installation and construction so no evidence remains of correction work. Return items that cannot be refinished in field to shop; make required alterations and refinish entire unit or provide new units.

END OF SECTION 05 52 13

SECTION 05 58 13 - COLUMN COVERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes snap-together metal column covers.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product, including finishing materials.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Snap-together metal column covers.
- C. Shop Drawings: Show fabrication and installation details for column covers.
- D. Samples: For each type of exposed finish required, prepared on 6-inch-square Samples of metal of same thickness and material indicated for the Work.

1.5 QUALITY ASSURANCE

- A. Fabricator Qualifications: A firm experienced in producing column covers similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver column covers wrapped in protective coverings and strapped together in suitable packs or in heavy-duty cartons. Remove protective coverings before they stain or bond to finished surfaces.

PART 2 - PRODUCTS

2.1 SNAP-TOGETHER COLUMN COVERS

- A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - 1. Fry Reglet Corporation; Series SD – vertical butt joint.
- B. Form column covers to shapes indicated from metal of type and minimum thickness indicated below. Return vertical edges and bend to form hook that engages continuous mounting clips.
 - 1. Aluminum Sheet: ASTM B209, with not less than strength and durability properties of Alloy 5005-H32, 0.125 inch thick.
 - 2. Aluminum Finish: High-performance organic coating.
 - 3. Increase metal thickness or reinforce with concealed stiffeners, backing materials, or both, as needed to provide flat surfaces where indicated.
 - 4. Support joints with concealed stiffeners as needed to hold exposed faces of adjoining sheets in flush alignment.
 - 5. Form returns at vertical joints to provide hairline V-joints.
 - 6. Fabricate column covers with hairline horizontal V-joints produced by forming returns on mating ends of column cover sections. Locate horizontal joints as indicated.
 - 7. Fabricate column covers without horizontal joints.
 - 8. Fabricate base and ceiling cap to match column covers and as shown on drawings.

2.2 MISCELLANEOUS MATERIALS

- A. Fasteners: Fabricated from same basic metal and alloy as fastened metal unless otherwise indicated. Do not use metals that are incompatible with materials joined.
 - 1. Provide concealed fasteners for interconnecting column covers and for attaching them to other work unless otherwise indicated.
- B. Backing Materials: Provided or recommended by column cover manufacturer.

2.3 FABRICATION, GENERAL

- A. Coordinate dimensions and attachment methods of column covers with those of adjoining construction to produce integrated assemblies with closely fitting joints and with edges and surfaces aligned unless otherwise indicated.
- B. Form metal to profiles indicated, in maximum lengths to minimize joints. Produce flat, flush surfaces without cracking or grain separation at bends.

2.4 GENERAL FINISH REQUIREMENTS

- A. Complete mechanical finishes of flat sheet metal surfaces before fabrication where possible. After fabrication, finish all joints, bends, abrasions, and other surface blemishes to match sheet finish.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Apply organic finishes to formed metal after fabrication unless otherwise indicated.
- D. 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 the same piece are not acceptable. 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.

2.5 ALUMINUM FINISHES

- A. 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, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of column covers.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Locate and place column covers plumb and in alignment with adjacent construction. Perform cutting, drilling, and fitting required to install column covers.
 - 1. Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
- B. Use concealed anchorages where possible.

- C. Form tight joints with exposed connections accurately fitted together.
- D. Corrosion Protection: Apply bituminous paint or other permanent separation materials on concealed surfaces where metals would otherwise be in direct contact with substrate materials that are incompatible or could result in corrosion or deterioration of either material or finish.

3.3 ADJUSTING AND CLEANING

- A. Touchup Painting: Immediately after erection, clean abraded areas of shop paint and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
 - 1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.
- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

3.4 PROTECTION

- A. Protect finishes from damage during construction period. Remove temporary protective coverings at time of Substantial Completion.

END OF SECTION 05 58 13

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood-preservative-treated lumber.
 - 2. Fire-retardant-treated materials, including plywood backing panels.
 - 3. Dimension lumber framing (non-treated).
 - 4. Miscellaneous lumber (non-treated).

1.3 DEFINITIONS

- A. Boards or Strips: Lumber of less than 2 inches nominal size in least dimension.
- B. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 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. Wood-Preservative-Treated Lumber: 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. Fire-Retardant-Treated Materials:
 - a. 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.

- b. 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 D5664.
 - c. For fire-retardant treatments, include physical properties of treated plywood both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D5516.
- 3. Dimension lumber framing (non-treated).
- 4. Metal framing anchors.

1.6 QUALITY ASSURANCE

- A. 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. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

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, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber 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. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.

- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:
 - 1. Hem-fir (north); NLGA.
 - 2. Spruce-pine-fir; NLGA.
 - 3. Hem-fir; WCLIB or WWP.
- E. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood nailers, blocking, and similar members in connection with flashing, vapor barriers, and waterproofing.
 - 2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.
 - 3. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, materials shall comply 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.
- 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 E84, 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. Treatment shall 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 D2898. 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 D3201 at 92 percent relative humidity. Use where exterior type is not indicated.
- C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent. Kiln-dry plywood after treatment to maximum moisture content of 15 percent.
- D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.

E. Dimension Lumber Items: Construction or No. 2 grade.

1. Species:

- a. Hem-fir (north); NLGA.
- b. Southern pine; SPIB.
- c. Douglas fir-larch; WCLIB or WWPA.
- d. Spruce-pine-fir; NLGA.
- e. Douglas fir-south; WWPA.
- f. Hem-fir; WCLIB or WWPA.
- g. Douglas fir-larch (north); NLGA.
- h. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

2. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

F. Equipment Backing Panels: Plywood, DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

G. Application: Treat items indicated on Drawings, and the following:

1. Plywood backing panels.

2.4 DIMENSION LUMBER FRAMING (NON-TREATED)

A. Joists, Rafters, and Other Framing Not Listed Above: No. 2 grade.

1. Species:

- a. Hem-fir (north); NLGA.
- b. Southern pine; SPIB.
- c. Douglas fir-larch; WCLIB or WWPA.
- d. Spruce-pine-fir; NLGA.
- e. Douglas fir-south; WWPA.
- f. Hem-fir; WCLIB or WWPA.
- g. Douglas fir-larch (north); NLGA.
- h. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

2.5 MISCELLANEOUS LUMBER (NON-TREATED)

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:

1. Blocking.
2. Nailers.
3. Furring.
4. Grounds.

- B. Dimension Lumber Items: Construction or No. 2 grade lumber of any of the following species:
1. Hem-fir (north); NLGA.
 2. Mixed southern pine or southern pine; SPIB.
 3. Spruce-pine-fir; NLGA.
 4. Hem-fir; WCLIB or WWPA.
 5. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:
1. Mixed southern pine or southern pine; No. 3 grade; SPIB.
 2. Hem-fir or hem-fir (north); Standard or No. 3 Common grade; NLGA, WCLIB, or WWPA.
 3. Spruce-pine-fir (south) or spruce-pine-fir; Standard or No. 3 Common grade; NeLMA, NLGA, WCLIB, or WWPA.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

2.6 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners of Type 304 stainless steel.
- B. Nails, Brads, and Staples: ASTM F1667.
- C. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.
- D. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC01 or ICC-ES AC193 as appropriate for the substrate.
1. Material: Carbon-steel components, zinc plated to comply with ASTM B633, Class Fe/Zn 5.
 2. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

2.7 METAL FRAMING ANCHORS

- 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. Cleveland Steel Specialty Company.
 - 2. Simpson Strong-Tie Company Inc.
- B. Allowable design loads, as published by manufacturer, shall meet or exceed those of products of manufacturers listed. 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. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.
- C. Galvanized-Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A653/A653M, G60 coating designation.
 - 1. Use for interior locations unless otherwise indicated.
- D. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A653/A653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.
 - 1. Use for wood-preservative-treated lumber and where indicated.
- E. Stainless Steel Sheet: ASTM A240/A240M or ASTM A666, Type 316.
 - 1. Use for exterior locations and where indicated.
- F. Bridging: Rigid, V-section, nailless type, 0.050 inch thick, length to suit joist size and spacing.

2.8 MISCELLANEOUS MATERIALS

- A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

- C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- D. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels. Install fire-retardant-treated plywood backing panels with classification marking of testing agency exposed to view.
- E. Install metal framing anchors to comply with manufacturer's written instructions. Install fasteners through each fastener hole.
- F. Install sill sealer gasket to form continuous seal between sill plates and foundation walls.
- G. Do not splice structural members between supports unless otherwise indicated.
- H. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - 1. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches o.c.
- I. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - 1. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
 - 2. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. and to solidly fill space below partitions.
- J. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- K. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- L. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. Table 2304.10.1, "Fastening Schedule," in New York State Building Code.
 - 2. ICC-ES evaluation report for fastener.
- M. Use steel common nails unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood. Drive nails snug but do not countersink nail heads unless otherwise indicated.

3.2 INSTALLATION OF WOOD BLOCKING AND NAILERS

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
 - 1. Provide 1/4-inch vent space between each length of blocking.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.

3.3 INSTALLATION OF WOOD FURRING

- A. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.

END OF SECTION 06 10 00

SECTION 06 10 26 - ROOFING ROUGH CARPENTRY**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood-preservative-treated materials.

1.3 DEFINITIONS

- A. Dimension Lumber: Lumber of 2 inches nominal size or greater but less than 5 inches nominal size in least dimension.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 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. Fasteners.
 - 2. Adhesives.
 - 3. Isolation barrier membrane.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Stack wood products flat with spacers beneath and between each bundle to provide air circulation. Protect wood products from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

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, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber 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. Dress lumber, S4S, unless otherwise indicated.
- B. Maximum Moisture Content of Lumber: 19 percent unless otherwise indicated.
- C. Plywood: DOC PS 1, Exterior A-C, unless otherwise indicated.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWP A U1; Use Category UC3b.
 - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Mark plywood with appropriate classification marking of an inspection agency acceptable to authorities having jurisdiction.
- E. Application: Treat items indicated on Drawings, and the following:
 - 1. Wood nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.

2.3 FASTENERS

- A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.
 - 1. Provide fasteners of Type 304 stainless steel.
- B. Wood Screws for Attachment of Roof Blocking: Screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, length as required to provide minimum embedment of 1-1/2-inches into substrate.

- C. Screws for Attachment to Metal Deck: Self drilling screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, 2-1/2-inch length (unless otherwise noted).
- D. Screws for Attachment to Steel Angles or Framing: Self drilling screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, #12, 2-1/2-inch length minimum (unless otherwise noted).
 - 1. With Winged Reamers: Wings designed to break off at contact with steel.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency. Anchor expands by tightening or hammering a pin after insertion into pre-drilled hole.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F593 and ASTM F594, Alloy Group 1 or 2.

2.4 MISCELLANEOUS MATERIALS

- A. Adhesives: Low odor, low VOC (less than 2 percent by weight), high-strength polyurethane formulation complying with ASTM D3498 that is approved for use indicated by adhesive manufacturer.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Henkel Corporation; Loctite PL Premium Fast Grab, or a comparable product.
- B. Isolation Barrier Membrane: 40-mil-thick, self-adhering sheet consisting of rubberized asphalt laminated to a cross-laminated polyethylene film with release liner on adhesive side.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle Coatings & Waterproofing, Incorporated; CCW-705, or comparable product.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Beginning installation constitutes Contractor's acceptance of substrates and conditions.
- B. Set roofing rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit roofing rough carpentry accurately to other construction. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

- C. Sort and select lumber so that natural characteristics do not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- D. Comply with AWP A M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- E. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous isolation barrier membrane between wood and metal decking.

3.2 INSTALLATION OF WOOD BLOCKING, NAILERS AND PLYWOOD

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
 - 1. Provide 1/4-inch vent space between each length of blocking.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Securely attach carpentry work to substrate by anchoring and fastening as indicated, complying with recommendations of FM Global Loss Prevention Data Sheet 1-49 and the following:
 - 1. Anchor bottom blocking to steel angles with minimum 3/8-inch stainless steel bolts with washers, at maximum 24 inches on center, or self-drilling screws in two rows, spaced not more than 24 inches on center and 6 inches from ends of blocking lengths.
 - 2. At locations where bottom blocking is to be attached directly to metal decking, provide isolation barrier membrane between deck and blocking, install wrinkle free. Apply primer if required by membrane manufacturer. Use primer rather than nails for installing membrane at low temperatures, overlap edges not less than 3-1/2 inches, roll laps with roller, cover membrane within 14 days. Attach bottom blocking with stainless steel self-drilling screws, penetrating metal decking at least 1 inch in two rows, spaced not more than 24 inches on center and 6 inches from ends of blocking lengths.
 - 3. Attach subsequent blocking to bottom blocking with stainless steel screws, penetrating at least 1-1/4 inches in two rows, spaced not more than 24 inches on center and 6 inches from ends of blocking lengths.
 - 4. Attach plywood to substrate with stainless steel screws spaced at 12 inches on center maximum. Where more than one layer of plywood is being attached, attach subsequent plywood to base layer of plywood/substrate with polyurethane construction adhesive beads spaced at 6 inches on center maximum and stainless-steel screws, penetrating at least 3/4 inch in two rows, spaced not more than 12 inches on center and within 4 inches from end of panel lengths.

5. At outside building corners, locate fasteners at 12 inches on center and 6 inches from corner, unless closer spacing is required to meet minimum 100 lb per fastener withdrawal force in any direction, or to comply with FM 1-49 recommendations.

END OF SECTION 06 10 26

SECTION 06 40 23 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior wood stairs.
 - 2. Fire-retardant-treated wood material.

1.3 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections, to ensure that interior architectural woodwork can be supported and installed as indicated.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data
 - 1. Interior Wood Stairs.
 - 2. Anchors.
 - 3. Product Data: For composite wood products, indicating that product contains no urea formaldehyde.
 - 4. Product Data: For installation adhesives, indicating VOC content.
- B. Shop Drawings:
 - 1. Include the following:
 - a. Dimensioned plans, elevations, and sections.
 - b. Attachment details.
 - 2. Show large-scale details.

3. Show locations and sizes of furring, blocking, and hanging strips, including blocking and reinforcement concealed by construction and specified in other Sections.

C. Samples:

1. Lumber for Transparent Finish (Stain or Clear Finish): Not less than 5 inches wide by 12 inches long, for each species and cut, finished on one side and one edge.
 - a. Finish: Comply with Division 09 Section "Painting."
2. Panel Products with Factory-Applied Finish: 12 by 12 inches.
3. Veneer-Faced Panel Products for Transparent Finish (Stain or Clear Finish): 12 by 12 inches, for each species and cut. Include at least one face-veneer seam and finish as specified.
 - a. Finish: Comply with Division 09 Section "Painting."

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: 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.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Do not deliver interior architectural woodwork until painting and similar finish operations that might damage woodwork have been completed in installation areas.
- B. Store woodwork in installation areas or in areas where environmental conditions comply with requirements specified in "Field Conditions" Article.
 1. Handle and store fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions.

1.8 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install interior architectural woodwork until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at levels designed for building occupants for the remainder of the construction period.
- B. Field Measurements: Where interior architectural woodwork 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.

1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being concealed by construction, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL WOODWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.

2.2 INTERIOR WOOD STAIRS

- A. Architectural Woodwork Standards Grade: Custom.
- B. Wood for Transparent Finish:
 1. Species and Cut: Red oak, plain sawn.
 2. Wood Moisture Content: 5 to 10 percent.
- C. Handrail Brackets: Cast stainless steel with wall flange drilled for exposed anchor and with support arm for screwing to underside of rail. Size to provide 1-1/2-inch clearance between handrail and face of wall.

2.3 SHEET MATERIALS

- A. Composite Wood Products: Provide materials that comply with requirements of the Architectural Woodwork Standards for each type of interior architectural woodwork and quality grade specified unless otherwise indicated.
 1. Composite Wood Products: Verify products are made without added urea formaldehyde.
 2. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.

2.4 FIRE-RETARDANT-TREATED WOOD MATERIAL

- A. Fire-Retardant-Treated Wood Materials: Where fire-retardant-treated materials are indicated, use materials complying with requirements that are acceptable to authorities having jurisdiction and with fire-test-response characteristics specified as determined by testing identical products in accordance with test method indicated by a qualified testing agency.
 1. Use treated materials that comply with requirements of the Architectural Woodwork Standards. 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 in accordance with ASTM E84, 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, transparent, or natural finish, use organic resin chemical formulation.
 3. Mill lumber before treatment, and implement 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 MISCELLANEOUS MATERIALS

- A. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage.
1. Provide metal expansion sleeves or expansion bolts for post-installed anchors.
 2. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.
- B. Installation Adhesive: Product recommended by fabricator for each substrate for secure anchorage.
1. Verify adhesives have a VOC content of 70 g/L or less.

2.6 FABRICATION

- A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- B. Fabricate interior architectural woodwork to dimensions, profiles, and details indicated.
1. Ease edges to radius indicated for the following:
 - a. Edges of Solid-Wood (Lumber) Members: 1/16 inch unless otherwise indicated.
 - b. Edges of Members More Than 3/4 Inch (19 mm) Thick: 1/8 inch.
- C. Complete fabrication, including assembly, to maximum extent possible before shipment to Project site.
1. Disassemble components only as necessary for shipment and installation.
 2. Where necessary for fitting at site, provide allowance for scribing, trimming, and fitting.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Before installation, condition interior architectural woodwork to humidity conditions in installation areas for not less than 72 hours prior to beginning of installation.
- B. Before installing interior architectural woodwork, examine shop-fabricated work for completion and complete work as required, including removal of packing and backpriming of concealed surfaces.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Grade: Install interior architectural woodwork to comply with same grade as item to be installed.
- B. Assemble interior architectural woodwork and complete fabrication at Project site to the extent that it was not completed during shop fabrication.
- C. Install interior architectural woodwork level, plumb, true in line, and without distortion.
 - 1. Shim as required with concealed shims.
 - 2. Install level and plumb to a tolerance of 1/8 inch in 96 inches.
- D. Scribe and cut interior architectural woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Fire-Retardant-Treated Wood: Install fire-retardant-treated wood to comply with chemical treatment manufacturer's written instructions, including those for adhesives used to install woodwork.
- F. Anchor interior architectural woodwork to anchors or blocking built in or directly attached to substrates.
 - 1. Secure with countersunk, concealed fasteners and blind nailing.
 - 2. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with interior architectural woodwork.
 - 3. For shop-finished items, use filler matching finish of items being installed.
- G. Stairs:
 - 1. Install stairs with treads and risers no more than 1/8 inch from indicated position.
 - 2. Secure with countersunk, concealed fasteners and blind nailing.
 - 3. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with wood surface.

3.3 RESTORATION

- A. Restore damaged and defective interior architectural woodwork, where possible, to eliminate functional and visual defects and to result in interior architectural woodwork being in compliance with requirements of Architectural Woodwork Standards for the specified grade.
- B. Where not possible to restore, replace defective woodwork.
- C. Field Finish: See Division 09 Section " Painting" for final finishing of installed interior architectural woodwork.

3.4 CLEANING

- A. Clean interior architectural woodwork on exposed and semiexposed surfaces.

END OF SECTION 06 40 23

SECTION 07 21 00 - THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Glass-fiber blanket.
 - 2. Insulation for miscellaneous voids.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Adhesive for bonding insulation.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Glass-fiber blanket, unfaced.
 - 2. Insulation for miscellaneous voids.

1.5 QUALITY ASSURANCE

- A. Spray Polyurethane Foam Installer Qualifications: An authorized representative who is trained and approved by manufacturer.
- B. Identification: Identify product R-values with manufacturer’s markings, or certification, in accordance with requirements of building Code in effect for the Project.

1.6 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.

PART 2 - PRODUCTS

- A. Glass-Fiber Blanket, Unfaced: ASTM C 665, Type I; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively, per ASTM E 84; passing ASTM E 136 for combustion characteristics.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. CertainTeed Corporation; Sustainable Insulation Fiber Glass Building.
 - b. Owens Corning; EcoTouch Pink Fiberglas Insulation.

2.2 ACCESSORIES

- A. Insulation for Miscellaneous Voids:
 - 1. Spray Polyurethane Foam Insulation for Miscellaneous Voids: ASTM C 1029, Type II, closed cell, minimum density of 1.75 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.0 deg F x h x sq. ft./Btu at 75 deg F, with maximum flame-spread and smoke-developed indexes of 25 and 400, respectively, per ASTM E 84.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont; Froth-Pak Foam Insulation, or comparable product.
- B. 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. Adhesives shall have a VOC content of [70] g/L or less.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for conditions affecting performance of the Work.
- B. Clean substrates of substances that are harmful to insulation, including removing projections capable of puncturing insulation, or that interfere with insulation attachment.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. 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.
- E. Install insulation so that manufacturer's R-value mark is readily observable, in accordance with requirements of building Code in effect for the Project.

3.3 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. 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. Spray Polyurethane Insulation for Miscellaneous Voids: Apply according to manufacturer's written instructions.

3.4 INSTALLATION OF SPRAY FOAM INSULATION

- 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.

- C. Comply with insulation manufacturer's written instructions applicable to products and applications.
- D. Prior to application, bridge gaps in construction at changes in substrate plane or changes in adjoining materials as recommended by manufacturer.
- E. Spray insulation to envelop entire area to be insulated and fill voids.
- F. Apply in multiple passes to not exceed maximum thicknesses recommended by manufacturer.
- G. Apply thermal barrier intumescent coating in accordance with manufacturer's written instructions and at the required dry film thickness per the applicable spray foam evaluation report.

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. 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

SECTION 07 27 26 - FLUID-APPLIED MEMBRANE AIR BARRIERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Vapor-retarding, fluid-applied air barriers.

1.3 DEFINITIONS

- A. Air-Barrier Material: A primary element that provides a continuous barrier to the movement of air.
- B. Air-Barrier Accessory: A transitional component of the air barrier that provides continuity.
- C. Air-Barrier Assembly: The collection of air-barrier materials and accessories applied to an opaque wall, including joints and junctions to abutting construction, to control air movement through the wall.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review air-barrier requirements and installation, special details, mockups, air-leakage and bond testing, air-barrier protection, and work scheduling that covers air barriers.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include manufacturer's written instructions for evaluating, preparing, and treating each substrate; technical data; dry film thickness; and tested physical and performance properties of products.

1. Accessory materials.
 2. Primers.
 3. Stainless-steel sheet.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
1. High-build, vapor-retarding air barrier.
- C. Shop Drawings: For air-barrier assemblies.
1. Show locations and extent of air-barrier materials, accessories, and assemblies specific to Project conditions.
 2. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction.
 3. Include details of interfaces with other materials that form part of air barrier.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Certificates, Compatibility: From air-barrier manufacturer, certifying compatibility of air barriers and accessory materials with Project materials that connect to or that come in contact with the barrier.
- C. Product Certificates, Fire Propagation Characteristics: From a qualified testing agency, documenting that air barrier system as a component of the indicated wall assembly has been tested and passed NFPA 285.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Mockups: Build mockups to set quality standards for materials and execution.
1. Build integrated mockups of exterior wall assembly 8 feet long by 8 feet high, incorporating backup wall construction, external cladding, window, storefront, door frame and sill, insulation, ties and other penetrations, and flashing to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.
 - a. Include junction with roofing membrane and foundation wall intersection.
 - b. If Architect determines mockups do not comply with requirements, reconstruct mockups and apply air barrier until mockups are approved.

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.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Remove and replace liquid materials that cannot be applied within their stated shelf life.
- B. Protect stored materials from direct sunlight.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Apply air barrier within the range of ambient and substrate temperatures recommended in writing by air-barrier manufacturer.
 1. Protect substrates from environmental conditions that affect air-barrier performance.
 2. Do not apply air barrier to a damp or wet substrate or during snow, rain, fog, or mist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Source Limitations: Obtain primary air-barrier materials and air-barrier accessories from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Air-Barrier Performance: Air-barrier assembly and seals with adjacent construction shall be capable of performing as a continuous air barrier and as a liquid-water drainage plane flashed to discharge to the exterior incidental condensation or water penetration. Air-barrier assemblies shall be capable of accommodating substrate movement and of sealing substrate expansion and control joints, construction material changes, penetrations, tie-ins to installed waterproofing, and transitions at perimeter conditions without deterioration and air leakage exceeding specified limits.
- B. Air-Barrier Assembly Air Leakage: Maximum 0.04 cfm/sq. ft. of surface area at 1.57 lbf/sq. ft., when tested according to ASTM E2357.

2.3 HIGH-BUILD AIR BARRIERS, VAPOR RETARDING

- A. High-Build, Vapor-Retarding Air Barrier: Synthetic polymer membrane with an installed dry film thickness, according to manufacturer's written instructions, of 40 mils or thicker over smooth, void-free substrates.
 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:

- a. Carlisle Coatings & Waterproofing; Fire Resist Barritech NP.
- b. Henry Company; Air-Bloc 32MR.
- c. Meadows, W. R., Inc.; Air-Shield LSR.
- d. Tremco, Inc., Commercial Sealants and Waterproofing Division, an RPM company; ExoAir 130.

2. Physical and Performance Properties:

- a. Air Permeance: Maximum 0.004 cfm/sq. ft. of surface area at 1.57-lbf/sq. ft. pressure difference; ASTM E2178.
- b. Vapor Permeance: Maximum 0.1 perm; ASTM E96/E96M, Desiccant Method.
- c. Ultimate Elongation: Minimum 300 percent; ASTM D412, Die C.
- d. Adhesion to Substrate: Minimum 16 lbf/sq. in. when tested according to ASTM D4541.
- e. Fire Propagation Characteristics: Passes NFPA 285 testing as part of an approved assembly.
- f. UV Resistance: Can be exposed to sunlight for 90 days according to manufacturer's written instructions.

2.4 ACCESSORY MATERIALS

- A. Requirement: Provide primers, transition strips, termination strips, joint reinforcing fabric and strips, joint sealants, counterflashing strips, flashing sheets and metal termination bars, termination mastic, substrate patching materials, adhesives, tapes, foam sealants, lap sealants, and other accessory materials that are recommended in writing by air-barrier manufacturer to produce a complete air-barrier assembly and that are compatible with primary air-barrier material and adjacent construction to which they may seal.
- B. Primer: Liquid waterborne primer recommended for substrate by air-barrier material manufacturer.
- C. Stainless-Steel Sheet: ASTM A240/A240M, Type 304, 0.0187 inch thick, and Series 300 stainless-steel fasteners.

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 substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.
 - 2. Verify that substrates have cured and aged for minimum time recommended in writing by air-barrier manufacturer.
 - 3. Verify that substrates are visibly dry and free of moisture. Test concrete substrates for capillary moisture by plastic sheet method according to ASTM D4263.
 - 4. Verify that masonry joints are flush and completely filled with mortar.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 SURFACE PREPARATION

- A. Clean, prepare, treat, fill, and seal substrate and joints and cracks in substrate according to manufacturer's written instructions and details. Provide clean, dust-free, and dry substrate for air-barrier application.
- B. Mask off adjoining surfaces not covered by air barrier 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 in concrete with substrate-patching material.
- E. Remove excess mortar from masonry ties, shelf angles, and other obstructions.
- F. At changes in substrate plane, apply sealant or termination mastic beads at sharp corners and edges to form a smooth transition from one plane to another.
- G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.
- H. Bridge expansion joints and discontinuous wall-to-wall, deck-to-wall, and deck-to-deck joints with air-barrier accessory material that accommodates joint movement according to manufacturer's written instructions and details.

3.3 ACCESSORIES INSTALLATION

- A. Install accessory materials according to air-barrier manufacturer's written instructions and details to form a seal with adjacent construction and ensure continuity of air and water barrier.
 - 1. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.
 - 2. Install transition strip on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over each substrate.
 - 3. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
 - 4. Apply primer to substrates at required rate and allow it to dry. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.

- B. Connect and seal exterior wall air-barrier material continuously to roofing-membrane air barrier, concrete below-grade structures, floor-to-floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings, using accessory materials.
- C. At end of each working day, seal top edge of strips and transition strips to substrate with termination mastic.
- D. Apply joint sealants forming part of air-barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- E. Wall Openings: Prime concealed, perimeter frame surfaces of windows, curtain walls, storefronts, and doors. Apply transition strip so that a minimum of 3 inches of coverage is achieved over each substrate. Maintain 3 inches of full contact over firm bearing to perimeter frames, with not less than 1 inch of full contact.
 - 1. Transition Strip: Roll firmly to enhance adhesion.
- F. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air-barrier material with foam sealant.
- G. Seal strips and transition strips around masonry reinforcing or ties and penetrations with termination mastic.
- H. Seal top of through-wall flashings to air barrier with an additional 6-inch-wide, transition strip.
- I. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counterflashings or ending in reglets with termination mastic.
- J. Correct punctures, voids, and deficient lapped seams in strips and transition strips. Slit and flatten fishmouths and blisters. Patch with transition strips extending 6 inches beyond corrected areas in strip direction.

3.4 PRIMARY AIR-BARRIER MATERIAL INSTALLATION

- A. Apply air-barrier material to form a seal with strips and transition strips and to achieve a continuous air barrier according to air-barrier manufacturer's written instructions and details. Apply air-barrier material within manufacturer's recommended application temperature ranges.
 - 1. Unless manufacturer recommends in writing against priming, apply primer to substrates at required rate and allow it to dry.
 - 2. Limit priming to areas that will be covered by air-barrier material on same day. Reprime areas exposed for more than 24 hours.
 - 3. Where multiple prime coats are needed to achieve required bond, allow adequate drying time between coats.
- B. High-Build Air Barriers: Apply continuous unbroken air-barrier material to substrates according to the following thickness. Apply air-barrier material in full contact around protrusions such as masonry ties.

1. Vapor-Retarding, High-Build Air Barrier: Total dry film thickness not less than 40 mils.
- C. Do not cover air barrier until it has been tested and inspected by testing agency.
- D. Correct deficiencies in or remove air barrier that does not comply with requirements; correct substrates and reapply air-barrier components.

3.5 FIELD QUALITY CONTROL

- A. Testing Agency: Owner may engage a qualified testing agency to perform tests and inspections.
- B. Inspections: Air-barrier materials, accessories, and installation are subject to inspection for compliance with requirements. Inspections may include the following:
 1. Continuity of air-barrier system has been achieved throughout the building envelope with no gaps or holes.
 2. Air-barrier dry film thickness.
 3. Continuous structural support of air-barrier system has been provided.
 4. Masonry and concrete surfaces are smooth, clean, and free of cavities, protrusions, and mortar droppings.
 5. Site conditions for application temperature and dryness of substrates have been maintained.
 6. Maximum exposure time of materials to UV deterioration has not been exceeded.
 7. Surfaces have been primed, if applicable.
 8. Laps in strips and transition strips have complied with minimum requirements and have been shingled in the correct direction (or mastic has been applied on exposed edges), with no fishmouths.
 9. Termination mastic has been applied on cut edges.
 10. Strips and transition strips have been firmly adhered to substrate.
 11. Compatible materials have been used.
 12. Transitions at changes in direction and structural support at gaps have been provided.
 13. Connections between assemblies (air-barrier and sealants) have complied with requirements for cleanliness, surface preparation and priming, structural support, integrity, and continuity of seal.
 14. All penetrations have been sealed.

- C. Tests: As determined by testing agency from among the following tests:
 - 1. Adhesion Testing: Air-barrier assemblies will be tested for required adhesion to substrate according to ASTM D4541 for each 600 sq. ft. of installed air barrier or part thereof.
- D. Air barriers will be considered defective if they do not pass tests and inspections.
 - 1. Apply additional air-barrier material, according to manufacturer's written instructions, where inspection results indicate insufficient thickness.
 - 2. Remove and replace deficient air-barrier components for retesting as specified above.
- E. Correct damage to air barriers caused by testing; follow manufacturer's written instructions.
- F. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

- A. Protect air-barrier system from damage during application and remainder of construction period, according to manufacturer's written instructions.
 - 1. Protect air barrier from exposure to UV light and harmful weather exposure as recommended in writing by manufacturer. If exposed to these conditions for longer than recommended, remove and replace air barrier or install additional, full-thickness, air-barrier application after correcting and preparing the overexposed materials according to air-barrier manufacturer's written instructions.
 - 2. Protect air barrier from contact with incompatible materials and sealants not approved by air-barrier manufacturer.
- B. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended in writing by manufacturer of affected construction.
- C. Remove masking materials after installation.

END OF SECTION 07 27 26

SECTION 07 52 16 - SBS MODIFIED BITUMINOUS MEMBRANE ROOFING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Styrene-butadiene-styrene (SBS) modified bituminous membrane roofing.
 - 2. Vapor retarder.
 - 3. Roof insulation.
- B. Section includes the installation of insulation strips in ribs of acoustical roof deck. Insulation strips are furnished under Division 05 Section "Steel Decking."

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D 1079 and glossary of NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.
- B. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mop-applied roofing asphalt and 75 centipoise for mechanical spreader-applied roofing asphalt, within a range of plus or minus 25 deg F, measured at the mop cart or mechanical spreader immediately before application.

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed membrane roofing and base 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. Membrane roofing and base flashings shall remain watertight.
 - 1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.
 - 2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D 3746 or ASTM D 4272.
- B. Material Compatibility: Provide roofing materials that are compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

- C. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.
 - 1. Corner Uplift Pressure: As indicated on Drawings.
 - 2. Perimeter Uplift Pressure: As indicated on Drawings.
 - 3. Field-of-Roof Uplift Pressure: As indicated on Drawings.
- D. FM Global Listing: Provide membrane roofing, base flashings, and component materials that comply with requirements in FM Global 4450 and FM Global 4470 as part of a membrane roofing system, and that are listed in FM Global's "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.
 - 1. Fire/Windstorm Classification: Class 1A-90.
 - 2. Hail-Resistance Rating: MH.
- E. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.
- F. Energy Star Listing: Roofing system shall be listed on the DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. SBS-modified bituminous membrane roofing.
 - 2. Roofing membrane sheet.
 - 3. Granule-surface roofing membrane cap sheet.
 - 4. Base sheet.
 - 5. Backer sheet.
 - 6. Metal-foil-surfaced flashing sheet.
 - 7. Fasteners for membrane and substrate board.
 - 8. Miscellaneous accessories.
 - 9. Self-adhering sheet vapor retarder.
 - 10. Polyisocyanurate board insulation/fasteners.
 - 11. Substrate joint tape.
 - 12. Walkway pads.
 - 13. Substrate board.
 - 14. Cover board.

- B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Base flashings and membrane terminations.
 - 2. Tapered insulation, including slopes.
 - 3. Crickets, saddles, sumps and tapered edge strips, including slopes.
 - 4. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
- C. Samples: For the following products:
 - 1. Cap sheet, of color required (match existing).
 - 2. Flashing sheet, of color required (match existing).
 - 3. Walkway pads, of color required.
- D. Warranties: Sample of special warranties.

1.7 INFORMATIONAL SUBMITTALS

- A. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - 1. Submit evidence of complying with performance requirements.
 - 2. For any materials not manufactured or supplied by the SBS membrane roofing system manufacturer, submit evidence indicating SBS membrane roofing system manufacturer's approval of such materials.
- B. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing system to include in maintenance manuals, including all information necessary for maintaining warranty coverage.
- B. Warranties: Executed special warranties.

1.9 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer that is UL listed for membrane roofing system identical to that used for this Project.
- B. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by membrane roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's special warranty.
- C. Source Limitations: Obtain components including roof insulation and fasteners for membrane roofing system from same manufacturer as membrane roofing or approved by membrane roofing manufacturer.

- D. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.
- E. Fire-Resistance Ratings: Where indicated, provide fire-resistance-rated roof assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- F. R-values: Identify insulation R-values with manufacturer's markings in accordance with building code applicable to Project.
- G. 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, 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 will affect 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.

1.10 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.

1.11 PROJECT 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.

1.12 COORDINATION

- A. Coordinate construction operations on or adjacent to roof, included in different Sections, which depend on each other for proper installation, connection, and operation.
- B. Remove only as much existing roofing system as can be covered with new roofing system during the same day. All building areas are to remain watertight at all times. The contractor is responsible for any damage associated with roof replacement work. Schedule and execute work to prevent leaks and excessive traffic on completed roof sections. Exercise care to provide protection for the interior of the building and to ensure water and roofing debris does not flow beneath any completed sections of the roof system. Do not disrupt activities in occupied spaces.

1.13 WARRANTY

- A. Special Warranty: Manufacturer's standard or customized form, without monetary limitation, in which manufacturer agrees to repair or replace components of membrane roofing system that fail in materials within specified warranty period.
 1. Special warranty includes membrane roofing, base flashings, roof insulation, roofing accessories, and other components of membrane roofing system.
 2. Warranty Period: 20 years from date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, and walkway products, against leaks and faulty or defective materials and workmanship, and to repair or replace work, without monetary limitation, for the following warranty period:
 1. Warranty Period: 2 years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SBS-MODIFIED ASPHALT-SHEET MATERIALS

A. SBS-Modified Bituminous Membrane Roofing:

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. Johns Manville.
 - b. Siplast, Inc.
 - c. Soprema.

B. Roofing Membrane Sheet: ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified.

C. Granule-Surface Roofing Membrane Cap Sheet: ASTM D 6163, Grade G, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); granule surfaced; suitable for application method specified, and as follows:

1. Granule Color: Light Gray (match existing, VIF).

2.2 BASE-SHEET MATERIALS

A. Base Sheet: ASTM D 4601, Type II, nonperforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.

2.3 BASE FLASHING SHEET MATERIALS

A. Backer Sheet: ASTM D 6164, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with polyester fabric), or ASTM D 6163, Grade S, Type I or II, SBS-modified asphalt sheet (reinforced with glass fibers); smooth surfaced; suitable for application method specified.

B. Metal-Foil-Surfaced Flashing Sheet: ASTM D 6298, metal-foil surfaced SBS-modified asphalt sheet (reinforced with glass fibers); suitable for application method specified, and as follows:

1. Foil Surfacing: Aluminum.

2.4 AUXILIARY ROOFING MEMBRANE MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing membrane.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Asphalt Primer: ASTM D 41.

- C. Roofing Asphalt: ASTM D 312, Type III or IV as recommended by roofing system manufacturer for application.
- D. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength, and acceptable to roofing system manufacturer.
- E. Metal Flashing Sheet: As specified in Division 07 Section "Roof Specialties."
- F. Miscellaneous Accessories: Provide those recommended by roofing system manufacturer.

2.5 SUBSTRATE BOARDS

- A. Substrate Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, Type X, 5/8 inch thick, factory primed.
 - 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. Georgia-Pacific Corporation; Dens Deck Prime.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.

2.6 VAPOR RETARDER

- A. Self-Adhering Sheet Vapor Retarder: ASTM D 1970, minimum of 40-mil- thick, polyethylene film laminated to layer of rubberized asphalt adhesive; maximum permeance rating of 0.1 perm; cold applied, with slip-resisting surface and release paper backing. Provide primer when recommended by vapor-retarder manufacturer.

2.7 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.
- B. Install insulation such that manufacturer's R-value markings are readily observable in accordance with building code in effect for Project.
- C. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 2, Grade 2 coated glass-fiber mat facer on both major surfaces.
- D. Tapered Insulation: Provide factory-tapered insulation boards fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated.
- E. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.8 INSULATION ACCESSORIES

- A. General: Furnish roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with membrane roofing.
- B. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Insulation Cant Strips: ASTM C 728, perlite insulation board.
- D. Wood Blocking: Comply with requirements in Division 06 Section "Roofing Rough Carpentry."
- E. Tapered Edge Strips: ASTM C 728, perlite insulation board.
- F. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2 inch thick, factory primed.
 - 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. Georgia-Pacific Corporation; Dens Deck Prime.
- G. Substrate Joint Tape: 6- or 8-inch- wide, coated, glass-fiber joint tape.

2.9 WALKWAYS

- A. Walkway Pads: Reinforced asphaltic composition pads with slip-resisting mineral-granule surface, manufactured as a traffic pad for foot traffic and acceptable to roofing system manufacturer, 3/8 inch thick, minimum.
 - 1. Pad Size: 32 inches by 32 inches.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
 - 1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.
 - 2. Verify that blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
 - 3. Verify that minimum concrete drying period recommended by roofing system manufacturer has passed.

4. Verify that concrete substrate is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
 - a. Test for moisture by pouring 1 pint of hot roofing asphalt on deck at start of each day's work and at start of each roof area or plane. Do not proceed with roofing work if test sample foams or can be easily and cleanly stripped after cooling.
 5. Verify that concrete-curing compounds that will impair adhesion of roofing components to roof deck have been removed.
 6. Verify that deck is securely fastened with no projecting fasteners and with no adjacent units in excess of 1/16 inch out of plane relative to adjoining deck.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing 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. Prime surface of concrete deck with asphalt primer at a rate of 3/4 gal./100 sq. ft. and allow primer to dry.
- D. Install insulation strips in ribs of acoustical roof decks according to acoustical roof deck manufacturer's written instructions.

3.3 SUBSTRATE BOARD INSTALLATION

- A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.
 1. Fasten substrate board to top flanges of steel deck according to recommendations in FM Approvals' "RoofNav" and FM Global Loss Prevention Data Sheet 1-29 for specified Windstorm Resistance Classification.
 2. Fasten substrate board to top flanges of steel deck to resist uplift pressure at corners, perimeter, and field of roof according to membrane roofing system manufacturers' written instructions.

3.4 VAPOR-RETARDER INSTALLATION

- A. Self-Adhering Sheet Vapor Retarder: Prime substrate if required by manufacturer. Install self-adhering sheet vapor retarder over area to receive vapor retarder, side and end lapping each sheet a minimum of 3-1/2 inches and 6 inches, respectively. Seal laps by rolling.
- B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into membrane roofing system.

3.5 INSULATION INSTALLATION

- A. Comply with roofing system manufacturer's written instructions for installing roof insulation.
- B. Install one lapped base-sheet course and mechanically fasten to substrate according to roofing system manufacturer's written instructions.
- C. Insulation Cant Strips: Install and secure preformed 45-degree insulation cant strips at junctures of roofing membrane system with vertical surfaces or angle changes more than 45 degrees.
- D. Install tapered insulation under area of roofing to conform to slopes indicated.
- E. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
 - 1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
- F. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or more, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
- G. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
- H. Install tapered edge strips at perimeter edges of roof that do not terminate at vertical surfaces.
- I. Adhered Insulation: Install each layer of insulation and adhere to substrate as follows:
 - 1. Prime surface of concrete deck with asphalt primer at rate of 3/4 gal./100 sq. ft. and allow primer to dry.
 - 2. Set each layer of insulation in a solid mopping of hot roofing asphalt applied within plus or minus 25 deg F of equiviscous temperature.
- J. Mechanically Fastened and Adhered Insulation: Install first layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
 - 1. Fasten first layer of insulation according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
 - 2. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.

3. Set each subsequent layer of insulation in a solid mopping of hot roofing asphalt applied within plus or minus 25 deg F of equiviscous temperature.
- K. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints a minimum of 6 inches in each direction from joints of insulation below. Loosely butt cover boards together and fasten to roof deck. Tape joints if required by roofing system manufacturer.
1. Fasten cover boards according to requirements in FM Approvals' "RoofNav" for specified Windstorm Resistance Classification.
 2. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.
 3. Set cover boards in a solid mopping of hot roofing asphalt applied within plus or minus 25 deg F of equiviscous temperature.

3.6 ROOFING MEMBRANE INSTALLATION, GENERAL

- A. Install roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."
- B. Start installation of roofing membrane in presence of roofing system manufacturer's technical personnel.
- C. Where roof slope exceeds 1/2 inch per 12 inches, install roofing membrane sheets parallel with slope.
1. Backnail roofing membrane sheets to nailer strips or substrate according to roofing system manufacturer's written instructions.
- D. Cooperate with testing agencies engaged or required to perform services for installing roofing system.
- E. Coordinate installation of roofing system so insulation and other components of the roofing membrane system not permanently exposed are not subjected to precipitation or left uncovered at the end of the workday or when rain is forecast.
1. At end of each day's work, provide tie-offs to cover exposed roofing membrane sheets and insulation with a course of coated felt set in roofing cement or hot roofing asphalt, with joints and edges sealed.
 2. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system.
 3. Remove and discard temporary seals before beginning work on adjoining roofing.
- F. Asphalt Heating: Do not raise roofing asphalt temperature above equiviscous temperature range more than one hour before time of application. Do not exceed roofing asphalt manufacturer's recommended temperature limits during roofing asphalt heating. Do not heat roofing asphalt within 25 deg F of flash point. Discard roofing asphalt maintained at a temperature exceeding finished blowing temperature for more than four hours.

- G. Substrate-Joint Penetrations: Prevent roofing asphalt and adhesives from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.

3.7 BASE-SHEET INSTALLATION

- A. Install lapped base-sheet course, extending sheet over and terminating beyond cants. Attach base sheet as follows:
 - 1. Adhere to substrate in a solid mopping of hot roofing asphalt.

3.8 SBS-MODIFIED BITUMINOUS MEMBRANE INSTALLATION

- A. Install modified bituminous roofing membrane sheet and cap sheet according to roofing manufacturer's written instructions, starting at low point of roofing system. Extend roofing membrane sheets over and terminate beyond cants, installing as follows:
 - 1. Adhere to substrate in a solid mopping of hot roofing asphalt applied at not less than 425 deg F.
 - 2. Unroll roofing membrane sheets and allow them to relax for minimum time period required by manufacturer.
- B. Laps: Accurately align roofing membrane sheets, without stretching, and maintain uniform side and end laps. Stagger end laps. Completely bond and seal laps, leaving no voids.
 - 1. Repair tears and voids in laps and lapped seams not completely sealed.
- C. Install roofing membrane sheets so side and end laps shed water.
- D. Broadcast matching granules over seam bleed-out and remove excess granules after curing.

3.9 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloped and vertical surfaces, at roof edges, and at penetrations through roof; secure to substrates according to roofing system manufacturer's written instructions, and as follows:
 - 1. Prime substrates with asphalt primer if required by roofing system manufacturer.
 - 2. Backer Sheet Application: Adhere backer sheet over roofing membrane at cants in a solid mopping of hot roofing asphalt.
- B. Extend base flashing up walls or parapets a minimum of 8 inches above roofing membrane and 4 inches onto field of roofing membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
 - 1. Seal top termination of base flashing.

- D. Install roofing membrane cap-sheet stripping where metal flanges and edgings are set on membrane roofing according to roofing system manufacturer's written instructions.
- E. Roof Drains: Set 30-by-30-inch-square metal flashing in bed of asphalt roofing cement on completed roofing membrane. Cover metal flashing with roofing membrane cap-sheet stripping and extend a minimum of 6 inches beyond edge of metal flashing onto field of roofing membrane. Clamp roofing membrane, metal flashing, and stripping into roof-drain clamping ring.
 - 1. Install stripping according to roofing system manufacturer's written instructions.

3.10 WALKWAY INSTALLATION

- A. Walkway Pads: Install walkway pads using units of size indicated or, if not indicated, of manufacturer's standard size according to walkway pad manufacturer's written instructions.
 - 1. Set walkway pads in hot roofing asphalt.
 - 2. Locate walkway pads at perimeters of new or replaced mechanical equipment/rooftop units.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections and to prepare test reports.
- B. Test Cuts: Test specimens will be removed to evaluate problems observed during quality-assurance inspections of roofing membrane as follows:
 - 1. Approximate quantities of components within roofing membrane will be determined according to ASTM D 3617.
 - 2. Test specimens will be examined for interply voids according to ASTM D 3617 and to comply with criteria established in Appendix 3 in ARMA/NRCA's "Quality Control Guidelines for the Application of Polymer Modified Bitumen Roofing."
 - 3. Repair areas where test cuts were made according to roofing system manufacturer's written instructions.
- C. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.
 - 1. Notify Architect and Owner 48 hours in advance of date and time of inspection.
- D. Roofing system will be considered defective if it does not pass tests and inspections.
 - 1. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.12 PROTECTING AND CLEANING

- A. Protect roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing 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 52 16

SECTION 07 53 23 - EPDM ROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Adhered ethylene-propylene-diene-terpolymer (EPDM) roofing system.
 - 2. Roof insulation.
 - 3. Cover board.
 - 4. Walkways.

1.3 DEFINITIONS

- A. Roofing Terminology: Definitions in ASTM D1079 and glossary of 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, Construction Manager, testing and inspecting agency representative, roofing Installer, roofing Installer's superintendent, roofing system manufacturer's technical representative, deck 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.
 - 4. Examine deck substrate conditions and finishes, 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 temporary protection requirements for roofing system during and after installation.
8. Review building occupancy, safety, HVAC and equipment shut-downs, noise levels and other items that will affect the building occupants and those on or near the site.
9. Review roof observation and repair procedures after roofing installation.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals (except field quality-control reports) required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.

1. EPDM sheet.
2. Sheet flashing.
3. Bonding adhesive.
4. Adhesive/primer.
5. Seaming material.
6. Lap sealant.
7. Water cutoff mastic.
8. Metal termination bars.
9. Fasteners.
10. Miscellaneous accessories.
11. Polyisocyanurate board insulation.
12. Tapered insulation.
13. Insulation fasteners.
14. Insulation adhesive.
15. Cover board.
16. Flexible walkways.
17. Insulation for miscellaneous voids.

- B. Sustainable Design Submittals:

1. Product Data: For applicable adhesives and sealants, indicating VOC content.

- C. Shop Drawings: Include roof plans, sections, details, and attachments to other work, including the following:

1. Layout, R-values and thickness of insulation.
2. Base flashings and membrane terminations.
3. Flashing details at penetrations.
4. Tapered insulation, thickness, R-values and slopes.
5. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
6. Walkway pad layout.

D. Samples: For the following products:

1. Roof membrane and flashings.
2. Roof insulation.
3. Cover board.
4. Walkway pads.

E. Wind Uplift Resistance Submittal: For roofing system, indicating compliance with wind uplift performance requirements.

F. Sample Warranties: For manufacturer's special warranties and special Project warranties.

1.7 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificates:

1. Performance Requirement Certificate: Signed by roof membrane manufacturer, identifying all roof system components and certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
 - a. Submit evidence of complying 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.

B. Field quality-control reports.

1.8 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing system to include in maintenance manuals.

B. Warranty: Executed special warranties and special Project warranties.

1.9 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed listed in FM Approvals' RoofNav listed in SPRI's Directory of Roof Assemblies for roofing system identical to that used for this Project.

1. Manufacturer's Technical Representative: A non-sales technical representative who shall, at a minimum:
 - a. Participate in the Preinstallation Roofing Conference.
 - b. Witness start of roofing membrane installation.
 - c. Inspect the roofing membrane installation when work is approximately 50 percent complete to ascertain that procedures being followed are proper and to determine whether any corrective work will be required.

- d. Inspect the roofing membrane installation at completion to determine whether any corrective work will be required prior to issuing the warranty. Notify the Owner and Architect a minimum of 72 hours before said inspection.
- 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, and has successfully completed a minimum of three similar-sized projects in the last five years.
 - 1. Installer's Superintendent Qualifications: An experienced superintendent who is trained and approved by roofing system manufacturer, to oversee installation on-site of roofing system at all times roofing work is in progress.
 - 2. Provide adequate number of experienced workers regularly engaged in this type of work who are skilled in the application techniques of the materials specified.
- C. Identification: Identify product R-values with manufacturer's markings, or certification, in accordance with requirements of building Code in effect for the Project.

1.10 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.
 - 1. Do not install materials that are wet or moisture damaged; remove from Project site.
- D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.11 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.
- B. Proceed with work such that recently completed roof areas are not subjected to construction traffic. Protect recently completed roof areas and inspect for possible damage.

1.12 COORDINATION

- A. Coordinate construction operations on or adjacent to roof, included in different Sections, which depend on each other for proper installation, connection, and operation.

1.13 WARRANTY

- A. Special Warranty: Manufacturer's total system "edge-to-edge" warranty, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period. Pro-rated warranties are not acceptable.
 - 1. Special warranty includes roof membrane, base flashings, roof insulation, fasteners, cover boards, and other components of roofing system.
 - 2. Special warranty includes roof specialties specified in Division 07 Section "Roof Specialties."
 - 3. Special warranty includes coverage for wind damage sustained up to wind speed requirements specified in "Performance Requirements" Article.
 - 4. Special warranty includes coverage for hail resistance.
 - 5. Warranty Period: 30 years from Date of Substantial Completion.
- B. Special Project Warranty: Submit roofing Installer's warranty, covering the Work of this Section, including all components of roofing system such as roof membrane, base flashing, roof insulation, fasteners, cover boards, and walkway products, against leaks and faulty or defective materials and workmanship, and to repair or replace work, without monetary limitation, for the following warranty period:
 - 1. Warranty Period: 2 years from Date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Installed roofing system and base 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. Roofing 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. Materials shall comply with the Building Code of New York State.
- C. Wind Uplift Resistance: Design roofing system to resist the following wind uplift pressures calculated according to the requirements of the Building Code of New York State, which references ASCE/SEI 7:
 - 1. Wind Speed: As indicated on Drawings.
 - 2. Wind Uplift Pressures: As indicated on Drawings.
- D. FM Approvals' RoofNav 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 FM Approvals' RoofNav for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals Certification markings.
 - 1. Fire/Windstorm Classification: Class 1A-90.
 - 2. Hail-Resistance Rating: FM Global Property Loss Prevention Data Sheet 1-34 MH.
- E. 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.
- F. 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.

2.2 MANUFACTURERS

- A. Source Limitations: Obtain components for roofing system from roof membrane manufacturer or manufacturers approved by roof membrane manufacturer.

2.3 ETHYLENE-PROPYLENE-DIENE-TERPOLYMER (EPDM) ROOFING

- A. EPDM Sheet: ASTM D4637/D4637M, Type I, nonreinforced, fire-retardant EPDM sheet.
 - 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. Carlisle SynTec Incorporated.
 - b. Firestone Building Products.
 - c. Johns Manville; a Berkshire Hathaway company.
 - 2. Thickness: 90 mils, nominal.

3. Sheet Width: Maximum allowable for applicable installation.
4. Exposed Face Color: Black.

2.4 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.
 2. Adhesives and sealants on the interior side of weather barrier shall comply with the following limits for VOC content:
 - a. Plastic Foam Adhesives: 50 g/L.
 - b. Panel Adhesives: 50 g/L.
 - c. Multipurpose Construction Adhesives: 70 g/L.
 - d. Fiberglass Adhesives: 80 g/L.
 - e. Other Adhesives: 250 g/L.
 - f. Single-Ply Roof Membrane Sealants: 450 g/L.
 - g. Nonmembrane Roof Sealants: 300 g/L.
 - h. Sealant Primers for Nonporous Substrates: 250 g/L.
 - i. Sealant Primers for Porous Substrates: 775 g/L.
- B. Sheet Flashing: 60-mil-thick EPDM, partially cured or cured, according to application.
- C. Bonding Adhesive: Manufacturer's standard, low-VOC type.
- D. Adhesive/Primer: Manufacturer's standard, low-VOC type.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Carlisle SynTec Incorporated; Cav-Grip III Low-VOC Adhesive/Primer, or comparable product.
- E. Membrane Cleaner: Manufacturer's standard.
- F. Seaming Material: Manufacturer's standard, synthetic-rubber polymer primer and 6-inch-wide minimum, butyl splice tape with release film.
 1. At Contractor's option, seam tape may be factory-applied type.
- G. Lap Sealant: Manufacturer's standard, single-component sealant, colored to match membrane roofing.
- H. Water Cutoff Mastic: Manufacturer's standard butyl mastic sealant.
- I. Metal Termination Bars: Manufacturer's standard, predrilled at 6-inch centers aluminum bars, approximately 1 by 1/8 inch thick; with sealant ledge.
 1. Fasteners: Series 300 stainless steel drive pin fasteners for masonry substrate embedment, Series 300 stainless steel screw-type fasteners at wood substrate embedment.

- J. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to roofing system manufacturer.
 - 1. Fasteners at Wood-Preservative-Treated Lumber: Screws complying with ASME B18.6.1. Series 300 stainless steel, non-magnetic, torx or square drive, #10, length as required to provide minimum embedment of 1-1/2-inches into substrate.
- K. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, molded pipe boot flashings, preformed inside and outside corner sheet flashings, reinforced EPDM securement strips, T-joint covers, in-seam sealants, termination reglets, cover strips, and other accessories.

2.5 ROOF INSULATION

- A. General: Preformed roof insulation boards manufactured or approved by EPDM roof membrane manufacturer, and in compliance with “Performance Requirements” Article.
 - 1. Minimum Total System R-Value: 30.
- B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 2, Grade 2, coated glass-fiber mat facer on both major surfaces.
 - 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 SynTec Incorporated; SecurShield Polyiso.
 - b. Firestone Building Products; ISOGARD CG.
 - c. Johns Manville; a Berkshire Hathaway company; ENRGY 3 CGF.
 - 2. Provide insulation tested as part of an assembly that satisfactorily passes UL 1256.
 - 3. Compressive Strength: 20 psi.
 - 4. Size: 48 by 48 inches, for adhered installation and 48 by 96 inches, for mechanical attachment.
 - 5. Thickness:
 - a. Base Layer: Not less than 2.4 inches.
 - b. Upper Layer: Not less than 2.4 inches.
- C. Tapered Insulation: Provide factory-tapered insulation boards.
 - 1. Material: Match roof insulation.
 - 2. Minimum Thickness: 1/2 inch.

3. Slope:
 - a. Roof Field: 1/8 inch per foot unless otherwise indicated on Drawings. (Some areas require 1/2" per foot at sloped roof deck areas as shown on Drawings).
 - b. Saddles, Crickets and Drain Sumps: 1/2 inch per foot unless otherwise indicated on Drawings. (Provide 'snub-nose' saddles and crickets to match width of tapered drain sump as shown on Drawings).
4. Provide fiber board tapered edge strips to transition from 1/2-inch to 0-inch.

2.6 INSULATION ACCESSORIES

- A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with other roofing system components.
- B. Fasteners: Factory-coated steel fasteners and metal plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
- C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:
 1. Bead-applied, low-rise, multicomponent urethane adhesive.
 2. 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 SynTec Incorporated; FAST Dual Cartridge Adhesive.
 - b. Firestone Building Products; I.S.O. Twin Pack Insulation Adhesive.
 - c. Johns Manville; a Berkshire Hathaway company; JM Two-Part Urethane Insulation Adhesive.
- D. Cover Board: ASTM C1289 Type II, Class 4, Grade 1, 1/2-inch-thick polyisocyanurate, coated glass-mat facer on both major surfaces, with a minimum compressive strength of 80 psi.
 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 SynTec Incorporated; SecurShield HD Polyiso.
 - b. Firestone Building Products; Isogard HD Cover Board.
 - c. Johns Manville; a Berkshire Hathaway company; Protector HD.
- E. Insulation for Miscellaneous Voids:
 1. Spray Polyurethane Foam Insulation for Miscellaneous Voids: ASTM C 1029, Type II, closed cell, minimum density of 1.75 lb/cu. ft. and minimum aged R-value at 1-inch thickness of 6.0 deg F x h x sq. ft./Btu at 75 deg F, with maximum flame-spread and smoke-developed indexes of 25 and 400, respectively, per ASTM E 84.

- a. Basis-of-Design Product: Subject to compliance with requirements, provide DuPont; Froth-Pak Foam Insulation, or comparable product.
2. Mineral Wool Insulation for Miscellaneous Voids: Mineral wool batt insulation designed for thermal resistance. ASTM C665, Flame Spread Index = 0, Smoke Developed Index = 0, ASTM E84 (UL 723), Non-Combustible, ASTM E136.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Rockwool; Comfortbatt Thermal Batt Insulation, or comparable product.

2.7 WALKWAYS

- A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads, not less than 0.30-inch thick and acceptable to roofing system manufacturer.
 1. Size: Approximately 30 by 30 inches.

2.8 ROOF INFORMATION DECALS

- A. Roofing manufacturer's roof information decal including the following information clearly printed in permanent ink:
 1. Name of roofing manufacturer.
 2. Name of roofing installer.
 3. Type of roofing system including membrane type and thickness.
 4. Date of substantial completion.
 5. Manufacturer's project identification number.
 6. Roofing system warranty duration.
 7. Telephone number for reporting warranty-related questions.

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 steel roof deck is solid and securely attached.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.

3.3 INSTALLATION OF ROOFING, GENERAL

- A. Install roofing system according to roofing system manufacturer's written instructions, in compliance with "Performance Requirements" Article 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.

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 insulation manufacturer's written instructions for installing roof insulation.
- C. Insulation Installation, General:
 - 1. Trim insulation neatly to fit around penetrations and projections, and to fit tight to intersecting sloping roof decks.
 - 2. Make joints between adjacent insulation boards not more than 1/8 inch in width.
 - 3. Fill gaps exceeding 1/8 inch with insulation.
 - 4. Cut and fit insulation within 1/8 inch of nailers, projections, and penetrations.
 - 5. Keep manufacturer's R-value markings readily observable in accordance with building Code in effect for Project.
 - 6. Construct tapered sumps at roof drain locations as shown on Drawings.
 - 7. Install fiber board tapered edge strips to transition from 1/2-inch to 0-inch.
 - 8. Trim insulation so that water flow is unrestricted.
- D. Installation Directly Over Metal Decking:
 - 1. Mechanically Attached Base Layer: Install base layer of insulation with end joints staggered not less than 12 inches in adjacent rows and with long joints continuous at right angle to flutes of decking.
 - a. Locate end joints over crests of decking.

- b. Mechanically attach base layer of insulation using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to metal decks.
 - 1) Fasten insulation to resist specified uplift pressure in compliance with “Performance Requirements” Article; minimum quantity: one fastener per 2 square feet at field and perimeter, one fastener per square foot at corners.
 - 2) Fasten into top flutes only; with fastener length not to exceed elevation of bottom flute.
- 2. Adhered Upper Layers: 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. Stagger end joints within each layer not less than 24 inches in adjacent rows.
 - b. Adhere each layer of insulation to substrate using adhesive in compliance with “Performance Requirements” Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, applied at a maximum of 4 inches on center at all field, perimeter, and corner roof areas, firmly pressing and maintaining insulation in place.
 - 2) When installing the adhesive, do not allow the adhesive installation pattern to exceed the width of the board being installed. Exceeding the width of the roof board may cause an uneven application of the adjacent board due to the rising adhesive. Remove any excess adhesive from adjacent surfaces immediately prior to rising and curing.
 - 3) Walk the boards into the adhesive and roll with a 30-inch wide, 150-pound weighted steel roller to ensure full embedment.

E. Installation Over Concrete, Gypsum or Other Types of Plank Decks:

- 1. Adhered Base Layer: Thoroughly clean and prime deck surface, install base layer of insulation with joints staggered not less than 24 inches in adjacent rows.
 - a. Adhere base layer of insulation to concrete, gypsum or plank deck in compliance with “Performance Requirements” Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set insulation in ribbons of bead-applied insulation adhesive, applied at a maximum of 4 inches on center at all field, perimeter, and corner roof areas, firmly pressing and maintaining insulation in place.
 - 2) When installing the adhesive, do not allow the adhesive installation pattern to exceed the width of the board being installed. Exceeding the width of the roof board may cause an uneven application of the adjacent board due to the rising adhesive. Remove any excess adhesive from adjacent surfaces immediately prior to rising and curing.

- 3) Walk the boards into the adhesive and roll with a 30-inch wide, 150-pound weighted steel roller to ensure full embedment.
2. Adhered Upper Layers: 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. Stagger end joints within each layer not less than 24 inches in adjacent rows.
 - b. Adhere each layer of insulation to substrate using adhesive in compliance with “Performance Requirements” Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - 1) Set each layer of insulation in ribbons of bead-applied insulation adhesive, applied at a maximum of 4 inches on center at all field, perimeter, and corner roof areas, firmly pressing and maintaining insulation in place.
 - 2) When installing the adhesive, do not allow the adhesive installation pattern to exceed the width of the board being installed. Exceeding the width of the roof board may cause an uneven application of the adjacent board due to the rising adhesive. Remove any excess adhesive from adjacent surfaces immediately prior to rising and curing.
 - 3) Walk the boards into the adhesive and roll with a 30-inch wide, 150-pound weighted steel roller to ensure full embedment.

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. Cut or score boards at angle changes to avoid bridging.
 2. Cut and fit cover board tight to nailers, projections, and penetrations.
 3. Adhere cover board to substrate using adhesive in compliance with “Performance Requirements” Article and FM Global Property Loss Prevention Data Sheet 1-29, as follows:
 - a. Set cover board in ribbons of bead-applied insulation adhesive, applied at a maximum of 4 inches on center at all field, perimeter, and corner roof areas, firmly pressing and maintaining insulation in place.
 - b. When installing the adhesive, do not allow the adhesive installation pattern to exceed the width of the board being installed. Exceeding the width of the cover board may cause an uneven application of the adjacent board due to the rising adhesive. Remove any excess adhesive from adjacent surfaces immediately prior to rising and curing.

- c. Walk the boards into the adhesive and roll with a 30-inch wide, 150-pound weighted steel roller to ensure full embedment.

3.6 INSTALLATION OF ADHERED ROOF MEMBRANE

- A. Thoroughly clean substrate of all debris, projections, and substances detrimental to membrane installation, including stray projections of adhesive.
- B. Adhere roof membrane over area to receive roofing according to roofing system manufacturer's written instructions.
- C. Unroll roof membrane and allow to relax before installing.
- D. Start installation of roofing in presence of roofing system manufacturer's technical personnel.
- E. Accurately align roof membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
- F. Bonding Adhesive: Apply 100 percent coverage 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.
- G. In addition to adhering, mechanically fasten roof membrane securely at terminations, penetrations, and perimeters.
- H. Apply roof membrane with side laps shingled with slope of roof deck where possible.
- I. Apply pressure to the membrane surface in accordance with manufacturer's instructions to obtain maximum contact between the membrane and substrate.
- J. Tape Seam Installation: Clean and prime both faces of splice areas, apply splice tape.
 - 1. Firmly roll side and end laps of overlapping roof membrane to ensure a watertight seam installation.
 - 2. Apply lap sealant and seal exposed edges of roofing terminations.
 - 3. At Contractor's option, use manufacturer's factory-applied seam tape installation system.
- K. Repair tears, voids, and lapped seams in roof membrane that do not comply with requirements.
- L. Spread sealant or mastic 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 splice areas, apply splicing cement, and firmly roll side and end laps of overlapping sheets to ensure a watertight seam installation. Apply lap sealant and seal exposed edges of sheet flashing terminations.
- E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.8 INSTALLATION OF WALKWAYS

- A. Flexible Walkways: Install walkway products according to manufacturer's written instructions.
 - 1. Install flexible walkways at the following locations:
 - a. Perimeter of each rooftop unit.
 - b. Top and bottom of each roof access ladder.
 - c. Roof access doors.
 - d. Locations indicated on Drawings.
 - e. As required by roof membrane manufacturer's warranty requirements.
 - 2. Adhere walkway products to substrate according to roofing system manufacturer's written instructions.

3.9 ROOF INFORMATION DECAL INSTALLATION

- A. Adhesively attach roofing manufacturer's Roof Information Decal at all roof access points (i.e. inside face of hatches, doors, etc. leading to the roof).

3.10 FIELD QUALITY CONTROL

- A. 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.
- B. Correct or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.
- C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.11 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, correct substrates, and correct or reinstall roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
- C. Thoroughly clean all roof and ground areas of dust, debris, excess materials and equipment.
- D. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 07 53 23

SECTION 07 71 00 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Roof-edge specialties.
 - 2. Counterflashings.
 - 3. Manufactured roof expansion joints.

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

- 1. Meet with Owner, Architect, Installer, and installers whose work interfaces with or affects roof specialties.
 - 2. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
 - 3. Review special roof details, roof drainage, and condition of other construction that will affect roof specialties.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section and by Division 07 Section "EPDM Roofing" concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

- 1. Fasteners.
 - 2. Canted roof-edge fascia.
 - 3. Drip-edge roof-edge fascia.
 - 4. One-piece counterflashings.
 - 5. Two-piece counterflashings.
 - 6. Manufactured roof expansion joints.

- B. Shop Drawings: For roof specialties.

- 1. Include plans, elevations, expansion-joint locations, keyed details, and attachments to other work. Distinguish between plant- and field-assembled work.

2. Include details for expansion and contraction; locations of expansion joints, including direction of expansion and contraction.
 3. Indicate profile and pattern of seams and layout of fasteners, cleats, clips, and other attachments.
 4. Detail termination points and assemblies, including fixed points.
 5. Include details of special conditions.
- C. Samples for Initial Selection: For each type of roof specialty indicated with factory-applied color finishes.
- D. Samples for Verification: For each type of roof specialty indicated, made from 12-inch lengths of full-size components in specified material, and including fasteners, cover joints, accessories, and attachments, as follows:
1. Roof-edge specialties.
 2. Counterflashings.
- E. Sample Warranty: For manufacturer's special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Manufacturer Certificates: For each type of roof specialty, as required by Division 07 Section "EPDM Roofing" certifying that each item complies with requirements specified in "Performance Requirements" Article.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roofing specialties to include in maintenance manuals.
- B. Warranty: Executed special warranty.

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.
- B. Furnish not less than six 12-foot-long sections of fascia covers, fascia extenders and counterflashings.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are FM Approvals listed for specified class and ANSI/SPRI ES-1 tested to specified design pressure.
- B. Source Limitations: Obtain roof specialties approved by manufacturer providing roofing-system warranty specified in Division 07 Section "EPDM Roofing."

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.
- B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.10 FIELD CONDITIONS

- A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.
- B. Coordination: Coordinate roof specialties with flashing, trim, and construction of parapets, roof deck, roof and wall panels, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Division 07 Section "EPDM Roofing".
- B. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Roof specialties 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. FM Approvals' Listing: Manufacture and install roof-edge specialties that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with FM Approvals' markings.
- C. SPRI Wind Design Standard: Manufacture and install roof-edge specialties tested and certified according to ANSI/SPRI ES-1 (Test Methods RE-1, RE-2, and RE-3, as applicable) to comply with the Building Code of New York State which references ASCE/SEI 7, and capable of meeting the wind load design criteria indicated on the Drawings.

- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. 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 ROOF-EDGE SPECIALTIES

- A. Canted Roof-Edge Fascia: Manufactured, roof-edge fascia system with a snap-on metal fascia cover in longest uniform section lengths not exceeding 12 feet. Provide matching corner units and fascia sumps.

1. Provide one of the following types of canted roof-edge fascia systems to meet wind speed requirements or to comply with roofing system manufacturer's warranty requirements:
 - a. Two-Piece Canted Roof-Edge Fascia: Two-piece fascia system with a continuous formed galvanized steel sheet cant, 0.028 inch thick (24 gage), minimum, with extended vertical leg terminating in a drip edge cleat.
 - 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 SynTec Systems; SecurEdge 200 Fascia System.
 - b) Firestone Building Products Company, LLC; EdgeGard +.
 - c) Johns Manville; Fascia System 200.
 - b. Three-Piece Canted Roof Edge Fascia: Three-piece fascia system with a continuous extruded aluminum anchor bar with extended vertical leg terminating in a drip edge cleat and continuous formed galvanized steel sheet canted waterdam, 0.028 inch thick (24 gage), minimum.
 - 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 SynTec Systems; SecurEdge 2000 Canted Fascia.
 - b) Firestone Building Products Company, LLC; AnchorGard Canted Fascia.
 - c) Johns Manville; Presto-Tite Canted Fascia.
2. Formed Aluminum Sheet Fascia Covers: Aluminum sheet, not less than 0.050 inch thick and as required to meet performance requirements.
 - a. Surface: Smooth, flat finish.
 - b. Finish: Clear anodic.

3. Corners and offsets: Factory mitered and continuously welded, not less than 2 feet long in each direction.
4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.
5. Fascia Accessories: Provide the following from the fascia system manufacturer:
 - a. Fascia Extenders: Manufactured, two-piece fascia extender with metal fascia extension in longest uniform section lengths practical not exceeding 12 feet and continuous formed galvanized steel sheet hold-down cleats, 0.028 inch thick (24 gage), minimum, with extended vertical leg terminating in a drip edge cleat. Provide matching corner units.
 - 1) Formed Aluminum: Not less than 0.050 inch thick, with pre-punched slotted holes at 12 inches o.c. at top edge, finished to match fascia cover.
 - 2) Corners: Factory mitered and continuously welded, not less than 2 feet long in each direction.
 - 3) Splice Plates: Concealed, of same material, finish, and shape as fascia extension.
 - b. Soffit Trim: Manufactured metal trim as indicated on Drawings, of same material and finish as fascia cover.
- B. Drip-Edge Roof-Edge Fascia: Manufactured, two-piece, roof-edge fascia consisting of formed compression-clamped metal fascia cover in section lengths not exceeding 12 feet and a continuous formed galvanized-steel sheet base, 0.028 inch thick, minimum, with extended vertical leg terminating in a drip-edge cleat. Provide matching corner units.
 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 Syntec Incorporated; "SecurSeal Drip Edge".
 - b. Firestone Building Products; "Firestone Drip Edge".
 - c. Johns Manville; "Johns Manville Drip Edge".
 2. Fascia Cover: Fabricated from the following exposed metal:
 - a. Formed Aluminum: Not less than 0.050 inch thick and as required to meet performance requirements.
 - b. Surface: Smooth, flat finish.
 - c. Finish: Clear anodic.
 3. Corners: Factory mitered and continuously welded, not less than 2 feet long in each direction.
 4. Splice Plates: Concealed, of same material, finish, and shape as fascia cover.

2.3 COUNTERFLASHINGS

A. One-Piece Counterflashings: Manufactured units formed of single counterflashing sections.

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 SynTec Systems; SecurEdge Counter Flashing 1 Pc. Reglet.
 - b. Firestone Building Products Company, LLC; 1 Piece Counter Flashing Reglet Version.
 - c. Metal-Era LLC; 1 Piece Counter Flashing Reglet Version.
2. Formed Aluminum: Not less than 0.050 inch thick.
3. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in longest uniform section lengths not exceeding 12 feet and compress against base flashings with joints lapped.
 - a. Surface-Mounted Type: Provide counterflashing with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
 - b. Reglet Type: For embedment in masonry mortar joints.

B. Two-Piece Counterflashings: Manufactured units formed to provide secure interlocking of separate receiver and counterflashing pieces.

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 SynTec Systems; SecurEdge 2 Pc. Counter Flashing Reglet.
 - b. Firestone Building Products Company, LLC; 2 Piece Counter Flashing Reglet Version.
 - c. Metal-Era LLC; 2 Piece Counter Flashing Reglet Version.
2. Formed Aluminum: Not less than 0.050 inch thick.
3. Surface-Mounted Receivers: Provide receivers with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
4. Embedded Receivers: For embedment in masonry mortar joints.
5. Counterflashings: Manufactured units of heights to overlap top edges of base flashings by 4 inches and in longest uniform section lengths not exceeding 12 feet designed to snap into receiver and compress against base flashings with joints lapped.

C. Aluminum Finish: Two-coat fluoropolymer.

1. Surface: Smooth, flat finish.
2. Finish: Clear anodic.

2.4 MANUFACTURED ROOF EXPANSION JOINTS

A. Aluminum Roof Expansion Joints: Factory-fabricated, continuous, waterproof, joint cover; consisting of a flexible black rubber membrane supported by closed-cell foam material to form a bellow. Attached to two aluminum metal flanges with provision for securing assembly to substrate and sealing assembly to roofing membrane or flashing.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Johns Manville, Inc.; Expand-O-Flash, or comparable product.
2. Flexible Membrane Cover: Type E, 60-mil, EPDM, Black as recommended by manufacturer.
3. Support Foam: Closed-cell, thickness varies from 3/8" to 3/4" as required by manufacturer for joint/bellow width, verify in field.
4. Flange Metal: .032" mill finish aluminum metal flanges.
5. Accessories: Provide factory fabricated units for joints, intersections, transitions, and end conditions and horizontal and vertical transitions including those to other building expansion joints and other components as recommended by roof-expansion-joint manufacturer for complete installation.
6. Seal: Continuous, waterproof membrane within joint and attached to substrate on sides of joint below the cover.

2.5 MATERIALS

- A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 coating designation.
- B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper to suit forming operations and performance required.
- C. Aluminum Extrusions: ASTM B221, alloy and temper recommended by manufacturer for type of use and finish indicated.

2.6 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Not permitted.
2. Fasteners for Aluminum: Series 300 stainless steel.
3. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel.

- B. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

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 and painted 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 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.
- D. Coil-Coated Aluminum Sheet Finishes:
 - 1. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

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. Examine walls, parapets, and roof edges for suitable conditions for roof specialties.
- C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION, GENERAL

- A. Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.
 - 1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
 - 2. Provide uniform, neat seams with minimum exposure of sealant.
 - 3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
 - 4. Torch cutting of roof specialties is not permitted.
 - 5. Do not use graphite pencils to mark metal surfaces.

- B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by isolating surfaces with adhered EPDM membrane or by other permanent separation as recommended by manufacturer.
 - 1. Underlayment: Where installing metal directly on cementitious or wood substrates, install a course of adhered EPDM membrane sheet underlayment.
- C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.
 - 1. Space movement joints at a maximum of 12 feet with no joints within 24 inches of corners or intersections unless otherwise indicated on Drawings.
 - 2. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.
 - 3. Loose-nail fascia extender at center of pre-punched slotted hole; do not draw nail tight.
 - 4. Stagger joints in fascia from those in fascia extender by not less than 24 inches.
- D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.
- E. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F.

3.3 INSTALLATION OF ROOF-EDGE SPECIALITIES

- A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners over fully adhered EPDM field membrane extended vertically to bottom of fascia.
- B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.
- C. Install fascia extender cover cleat with provisions for expansion and fasteners loose in slotted holes.
- D. Strip-in cleat with adhered EPDM membrane flashing up and over cant dam, installed as indicated on Drawings prior to installation of fascia cover.

3.4 INSTALLATION OF COUNTERFLASHINGS

- A. Coordinate installation of counterflashings with installation of base flashings.
- B. Counterflashings: Insert counterflashings into reglets or other indicated receivers; ensure that counterflashings overlap 4 inches over top edge of base flashings. Lap counterflashing joints a minimum of 4 inches and bed with butyl sealant. Fit counterflashings tightly to base flashings.
- C. Coordinate installation of two-piece counterflashings with masonry installer.

3.5 INSTALLATION OF MANUFACTURED ROOF EXPANSION JOINTS

- A. Comply with manufacturer's written instructions for handling and installing roof expansion joints.
 - 1. Anchor roof expansion joints securely in place, with provisions for required movement. Use fasteners, protective coatings, sealants, and miscellaneous items as required to complete roof expansion joints.
 - 2. Install roof expansion joints true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
 - 3. Provide for linear thermal expansion of roof expansion joint materials.
 - 4. Provide uniform profile of roof expansion joint throughout its length; do not stretch or squeeze membranes.
 - 5. Provide uniform, neat seams.
 - 6. Install roof expansion joints to fit substrates and to result in watertight performance.
- B. Directional Changes: Install factory-fabricated units at directional changes to provide continuous, uninterrupted, and watertight joints.
- C. Transitions to Other Expansion-Control Joint Assemblies: Coordinate installation of roof expansion joints with other exterior expansion-control joint assemblies to result in watertight performance. Install factory-fabricated units at transitions between roof expansion joints and exterior expansion-control joint systems.
- D. Splices: Splice roof expansion joints to provide continuous, uninterrupted, and waterproof joints.
- E. Install waterproof splices and prefabricated end dams to prevent leakage of secondary-seal membrane.

3.6 CLEANING AND PROTECTION

- A. Clean all surfaces, clean off excess sealants.
- B. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.
- C. Replace roof specialties that have been damaged or that cannot be successfully restored by finish touchup or similar minor restoration procedures.

END OF SECTION 07 71 00

SECTION 07 73 00 – ROOF DRAINS AND ACCESSORIES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Roof drains, drain pipe, fittings, and insulation.
 - 2. Downspout nozzles.
 - 3. Vent pipe extensions.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Roof drain pipe and fittings.
 - 2. Cast-iron, large-sump, general-purpose roof drains.
 - 3. Roof drain insulation.
 - 4. PVC jacket.
 - 5. Roof drain pipe insulation.
 - 6. Downspout nozzles.
 - 7. Prefabricated vent pipe extensions.

1.5 QUALITY ASSURANCE

- A. Drainage piping specialties shall bear label, stamp, or other markings of specified testing agency.

PART 2 - PRODUCTS

2.1 METAL ROOF DRAINS

A. Cast-Iron, Large-Sump, General-Purpose Roof Drains:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Smith, Jay R. Mfg. Co.; No. 1015Y-R-C-U-G Large General Purpose Roof Drain or comparable product by one of the following:
 - a. Josam Company.
 - b. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Standard: ASME A112.6.4, for general-purpose roof drains.
3. Body Material: Cast iron.
4. Dimension of Body: Nominal 16-inch diameter.
5. Combination Flashing Ring and Gravel Stop: Required.
6. Outlet: Bottom.
7. Adjustable Extension Sleeves: Required.
8. Underdeck Clamp: Required.
9. Sump Receiver Plate: Required.
10. Dome Material: Galvanized Cast Iron.
11. Vandal-Proof Dome: Required.

B. Roof Drain Insulation:

1. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, without factory-applied jacket.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Johns Manville; Micro-Lok, or a comparable product.
 - b. Thickness: 2 inches.
2. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C, factory-fabricated fitting covers with glass fiber inserts. Tape as recommended by manufacturer.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Johns Manville; Zeston 2000, or a comparable product.
 - b. Adhesive: As recommended by jacket material manufacturer.

- c. Color: White.
- d. Shapes: Roof drain sumps.

C. Roof Drain Pipe and Fittings:

- 1. General: Match size of existing connecting piping. Provide cleanouts as required by code, and all hangers and supports required to adequately secure piping to building structure, without penetrating insulation vapor barriers.
- 2. Below Grade Piping:
 - a. Hub-and-Spigot, Cast-Iron Soil Pipe and Fittings:
 - 1) Pipe and Fittings: ASTM A 74, Service classes.
 - 2) Gaskets: ASTM C 564, rubber.
- 3. Above Grade Piping: Provide the following:
 - a. Hubless, Cast-Iron Soil Pipe and Fittings:
 - 1) Pipe and Fittings: ASTM A 888 or CISPI 301.
 - 2) CISPI, Hubless-Piping Couplings:
 - a) Standards: ASTM C 1277 and CISPI 310.
 - b) Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

D. Roof Drain Pipe Insulation:

- 1. Mineral-Fiber, Preformed Pipe Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Johns Manville; Micro-Lok, or a comparable product.
- 2. PVC Jackets: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C, factory-fabricated fitting covers with glass fiber inserts. Tape as recommended by manufacturer.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Johns Manville; Zeston 2000, or a comparable product.
 - b. Adhesive: As recommended by jacket material manufacturer.
 - c. Color: White.
 - d. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps and mechanical joints.

E. Insulating Cements:

1. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.
2. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Ramco Insulation, Inc.; Ramcote 1200 and Quik-Cote.

F. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

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. ABI, Ideal Tape Division; 428 AWF ASJ.
 - b. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0836.
 - c. Compac Corporation; 104 and 105.
 - d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.
2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

G. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. Provide insulation with factory-applied jacket.

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. CertainTeed Corp.; CertaPro Commercial Board.
 - b. Fibrex Insulations Inc.; FBX.
 - c. Johns Manville; 800 Series Spin-Glas.
 - d. Knauf Insulation; Insulation Board.
 - e. Manson Insulation Inc.; AK Board.
 - f. Owens Corning; Fiberglas 700 Series.

2.2 DOWNSPOUT NOZZLES

A. Downspout Nozzles:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Jay R. Smith Mfg. Co.; Division of Smith Industries, Inc.; No. 1771-BS or comparable product by one of the following:
 - a. Josam Company.
 - b. MIFAB, Inc.
 - c. Watts Water Technologies, Inc.
 - d. Zurn Plumbing Products Group; Specification Drainage Operation.
2. Body Material: Cast brass.
3. Outlet: No-hub adaptor.
4. Bird Screen: Stainless steel.
5. Size: Same as connected conductor.

2.3 VENT PIPE EXTENSIONS

- ### A. Vent Pipe Extensions: Prefabricated plumbing vent pipe extensions. PVC pipe with integral six-inch long joint splice sleeve insert at each end. Verify existing pipe size in field.
1. Basis-of-Design Product: Subject to compliance with requirements, provide OMG Roofing Products; "Tubos Vent Pipe Extensions," or a comparable product.

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. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- ### A. Install roof drains at low points of roof areas according to roof membrane manufacturer's written installation instructions. Roofing materials are specified in Division 07 Sections.
1. Install flashing collar or flange of roof drain to prevent leakage between drain and adjoining roofing. Maintain integrity of waterproof membranes where penetrated.

2. Position roof drains for easy access and maintenance.
 3. Insulate roof drain body, roof drain and fittings.
- B. Install roof drain piping as indicated unless deviations from layout are approved on coordination drawings.
1. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.
 2. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
 3. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
 4. Install piping free of sags and bends.
 5. Install fittings for changes in direction and branch connections.
 6. Install piping to allow application of insulation.
 7. Install piping at the following minimum slopes unless otherwise indicated:
 - a. Horizontal Storm Drainage Piping: 1 percent downward in direction of flow.
 8. Install prefabricated vent pipe extensions according to manufacturer's written installation instructions or field fabricate the vent extension to provide the required vent height.
 9. Install downspout nozzles at exposed bottom of conductors where they spill onto lower roofs, according to manufacturer's written installation instructions. Mechanically attach to wall with stainless steel hardware and seal all perimeters.
- C. Insulation:
1. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.
 2. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of piping including fittings, valves, and specialties.
 3. Install insulation tight and sealed to existing insulation – verify in field.
 4. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.
 5. Install insulation with longitudinal seams at top and bottom of horizontal runs.
 6. Install multiple layers of insulation with longitudinal and end seams staggered.

7. Keep insulation materials dry during application and finishing.
8. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.
9. Install insulation with least number of joints practical.
10. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.
11. Install insulation continuously through hangers and around anchor attachments.
12. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.
13. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.
14. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
15. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.
16. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.
17. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.
18. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere and seal patches similar to butt joints.

D. Insulation Installation on Roof Drain Bodies:

1. Insulate roof drain bodies using preformed fitting insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Fill joints, seams, and irregular surfaces with insulating cement.
2. Adhere fitted PVC cover to insulated Roof Drain Body with PVC Jacket Adhesive. Tape PVC covers to adjoining insulation facing using PVC tape. Seal voids to maintain vapor barrier on drain body assembly.

3.3 CONNECTIONS

- A. Comply with requirements for piping connections per Plumbing Code of New York State. Drawings indicate general arrangement of piping, fittings, and specialties.

3.4 PROTECTION

- A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

END OF SECTION 07 73 00

SECTION 07 84 13 - PENETRATION FIRESTOPPING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.
- B. Product Schedule: For each penetration firestopping system. Include type of penetration, illustration of firestopping system, and design designation of qualified testing and inspecting agency.

1.5 CLOSEOUT SUBMITTALS

- A. Installer Certificates: From Installer indicating that penetration firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A firm that has been approved by FM Approvals according to FM Approvals 4991, "Approval Standard for Firestop Contractors," or been evaluated by UL and found to comply with its "Qualified Firestop Contractor Program Requirements."

1.7 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.

1.8 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.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain joint firestop systems for each type of joint opening indicated from single manufacturer.

2.2 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 firestop systems installed with products bearing the classification marking of a qualified product certification agency in accordance with listed system designs published by a qualified testing agency.
 - 1) UL in its online directory "Product iQ."

2.3 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 are to be compatible with one another, with the substrates forming openings, and with penetrating items if any.

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. 3M Fire Protection Products.
 - b. Hilti, Inc.
 - c. RectorSeal, a CSW Industrials company.
- B. Penetrations in Fire-Resistance-Rated Walls: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479.
 1. F-Rating: Not less than the fire-resistance rating of the wall penetrated.
 2. Membrane Penetrations: Install recessed fixtures such that the required fire resistance will not be reduced.
- C. Penetrations in Horizontal Assemblies: Penetration firestopping systems with ratings determined per ASTM E814 or UL 1479.
 1. F-Rating: At least one hour, but not less than the fire-resistance rating of the floor penetrated.
 2. T-Rating: At least one hour, but not less than the fire-resistance rating of the floor. The following floor penetrations do not require a T-rating:
 - a. Those within the cavity of a wall.
 - b. Floor, tub, or shower drains within a concealed space.
 - c. 4-inch or smaller metal conduit penetrating directly into metal-enclosed electrical switchgear.
- D. Penetrations in Smoke Barriers: Penetration firestopping systems with ratings determined per UL 1479.
 1. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening and no more than 50-cfm cumulative total for any 100 sq. ft. at both ambient and elevated temperatures.
- E. Exposed Penetration Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, per ASTM E84.
- 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.

2.4 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 strips for use around combustible penetrants.
- 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: Compressible, removable, and reusable intumescent pillows encased in fire-retardant polyester or glass-fiber cloth. 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.
- K. Fire-Rated Cable Sleeve Kits: Complete kits designed for new or existing cable penetrations through walls to accept standard accessories.
- L. Thermal Wrap: Flexible protective wrap tested and listed for up to 2-hour fire ratings in accordance with ASTM E814/UL 1479 for membrane penetrations or ASTM E1725/UL 1724 for thermal barrier and circuit integrity protection.
- M. Fire-Rated Cable Pathways: Single or gangable device modules composed of a steel raceway with integral intumescent material and requiring no additional action in the form of plugs, twisting closure, putty, pillows, sealant, or otherwise to achieve fire and air-leakage ratings.
- N. Retrofit Device for Cable Bundles: Factory-made, intumescent, collar-like device for firestopping existing over-filled cable sleeves and capable of being installed around projecting sleeves and cable bundles.
- O. Wall-Opening Protective Materials: Intumescent, non-curing putty pads or self-adhesive inserts for protection of electrical switch and receptacle boxes.

- P. Fire-Rated HVAC Retaining Angles: Steel angle system with integral intumescent firestop gasket for use around rectangular steel HVAC ducts without fire dampers.
- Q. Firestop Plugs: Flexible, re-enterable, intumescent, foam-rubber plug for use in blank round openings and cable sleeves.
- R. Fire-Rated Cable Grommet: Molded two-piece grommet made of plenum-grade polymer and foam inner core for sealing small cable penetrations in gypsum walls up to 1/2 inch diameter.
- S. Closet Flange Gasket: Molded, single-component, flexible, intumescent gasket for use beneath a water closet (toilet) flange in floor applications.
- T. Endothermic Wrap: Flexible, insulating, fire-resistant, endothermic wrap for protecting membrane penetrations of utility boxes, critical electrical circuits, communications lines, and fuel lines.

2.5 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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 OF PENETRATION FIRESTOPPING SYSTEMS

- 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. Special Inspections: Special Inspections are required for the work of this Section. Refer to Division 01 Section "Quality Requirements" and its attachments.
 1. 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. Proceed with enclosing penetration firestopping systems with other construction only after 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.

3.7 PENETRATION FIRESTOPPING SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to UL system numbers in its online directory "Product iQ" under product Category XHEZ.
- B. For each location where a penetration occurs, provide a firestopping system selected from the floor and wall system below that complies with this Section and is suitable for the penetration conditions indicated for the Project.

FLOOR Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b				
TYPE OF PENETRANT	FLOOR PENETRATION SYSTEMS (First Alpha Component = C or F)			
	Concrete Floors with a Minimum Thick- ness Less Than or Equal to 5 Inches (127 MM)	Concrete Floors with a Minimum Thick- ness OF MORE Than 5 Inches (127 MM)	Framed Floors	Floor-ceiling assem- blies consisting of concrete with mem- brane protection
NO PENETRATING ITEMS	C-AJ-0001-0999 or F-A-0001-0999	C-BJ-0001-0999 or F-B-0001-0999	F-C-1001-1999	
METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-1001-1999 or F-A-1001-1999	C-BJ-1001-1999, C-BK-1001-1999, or F-B-1001-1999	F-C-1001-1999	F-E-1001-1999
NONMETALLIC PIPE, CONDUIT, OR TUBING	C-AJ-2001-2999 or F-A-2001-2999	C-BJ-2001-2999, C-BK-2001-2999, or F-B-2001-2999	F-C-2001-2999	F-E-2001-2999
ELECTRICAL CABLES	C-AJ-3001-3999 or F-A-3001-3999	C-BJ-3001-3999, C-BK-3001-3999, or F-B-3001-3999	F-C-3001-3999	F-E-3001-3999
CABLE TRAYS WITH ELECTRICAL CABLES	C-AJ-4001-4999 or F-A-4001-4999	C-BJ-4001-4999 or F-B-4001-4999		
INSULATED PIPES	C-AJ-5001-5999	C-BJ-5001-5999,	F-C-5001-5999	F-E-5001-5999

FLOOR Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b				
TYPE OF PENETRANT	FLOOR PENETRATION SYSTEMS			
	(First Alpha Component = C or F)			
	Concrete Floors with a Minimum Thickness Less Than or Equal to 5 Inches (127 MM)	Concrete Floors with a Minimum Thickness OF MORE Than 5 Inches (127 MM)	Framed Floors	Floor-ceiling assemblies consisting of concrete with membrane protection
	or F-A-5001-5999	C-BK-5001-5999, or F-B-5001-5999		
MISCELLANEOUS ELECTRICAL PENETRANTS	C-AJ-6001-6999 or F-A-6001-6999	C-BJ-6001-6999		
MISCELLANEOUS MECHANICAL PENETRANTS	C-AJ-7001-7999 or F-A-7001-7999	C-BJ-7001-7999 or F-B-7001-7999	F-C-7001-7999	F-E-7001-7999
GROUPINGS OF PENETRATIONS	C-AJ-8001-8999 or F-A-8001-8999	C-BJ-8001-8999 or F-B-8001-8999	F-C-8001-8999	F-E-8001-8999

WALL Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b				
TYPE OF PENETRANT	Wall PENETRATION SYSTEMS (First Alpha Component = C or W)			
	Concrete or Masonry Walls with a Mini- mum Thickness Less Than or Equal to 8 Inches (203 MM)	Concrete or Masonry Walls with a Mini- mum Thickness OF MORE Than 8 Inch- es (203 MM)	Framed Walls	Composite panel walls
NO PENETRATING ITEMS	C-AJ-0001-0999, C-BJ-0001-0999, or W-J-0001-0999		W-L-000-1-0999	
METALLIC PIPE, CONDUIT, OR TUBING	C-AJ-1001-1999, C-BJ-1001-1999, or W-J-1001-1999	C-BK-1001-1999 or W-K-1001-1999	W-L-1001-1999	W-N-1001-1999
NONMETALLIC PIPE, CONDUIT, OR TUBING	C-AJ-2001-2999, C-BJ-2001-2999, or W-J-2001-2999	C-BK-2001-2999 or W-K-2001-2999	W-L-2001-2999	W-N-2001-2999
ELECTRICAL CABLES	C-AJ-3001-3999, C-BJ-3001-3999, or W-J-3001-3999	C-BK-3001-3999 or WK-3001-3999	W-L-3001-3999	
CABLE TRAYS WITH ELECTRICAL CABLES	C-AJ-4001-4999, C-BJ-4001-4999, or W-J-4001-4999	W-K-4001-4999	W-L-4001-4999	

WALL Firestopping Systems Listed Using the Alpha-Alpha-Numeric Identification System Published in UL's <i>Fire Resistance Directory</i> , Vols. 2a - 2b				
TYPE OF PENETRANT	Wall PENETRATION SYSTEMS (First Alpha Component = C or W)			
	Concrete or Masonry Walls with a Mini- mum Thickness Less Than or Equal to 8 Inches (203 MM)	Concrete or Masonry Walls with a Mini- mum Thickness OF MORE Than 8 Inch- es (203 MM)	Framed Walls	Composite panel walls
INSULATED PIPES	C-AJ-5001-5999, C-BJ-5001-5999, or W-J-5001-5999	C-BK-5001-5999	W-L-5001-5999	W-N-5001-5999
MISCELLANEOUS ELECTRICAL PENETRANTS	C-AJ-6001-6999, C-BJ-6001-6999, or W-BJ-6001-6999		W-L-6001-6999	
MISCELLANEOUS MECHANICAL PENETRANTS	C-AJ-7001-7999, C-BJ-7001-7999, or W-J-7001-7999		W-L-7001-7999	W-N-7001-7999
GROUPINGS OF PENETRATIONS	C-AJ-8001-8999, C-BJ-8001-8999, or W-J-8001-8999		W-L-8001-8999	

END OF SECTION 07 84 13

SECTION 07 84 43 - JOINT FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Joints in or between fire-resistance-rated constructions.
 - 2. Joints at exterior curtain-wall/floor intersections.
 - 3. Joints in smoke barriers.

1.3 PREINSTALLATION MEETINGS

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

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Joints in or between fire-resistance-rated constructions.
 - 2. Joints at exterior curtain-wall/floor intersections.
 - 3. Joints in smoke barriers.
- B. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of 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.

PART 2 - PRODUCTS

2.1 SOURCE LIMITATIONS

- A. Obtain joint firestop systems for each type of joint opening indicated from single manufacturer.

2.2 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 firestop systems installed with products bearing the classification marking of a qualified product certification agency in accordance with Listed System Designs published by a qualified testing agency.
 - 1) UL in its online directory "Product iQ."
- B. Rain/Water Resistance: For perimeter fire-barrier system applications, where inclement weather or greater-than-transient water exposure is expected, use products that dry rapidly and cure in the presence of atmospheric moisture sufficient to pass ASTM D6904 early rain-resistance test (24-hour exposure).

2.3 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 must accommodate building movements without impairing their ability to resist the passage of fire and hot gases.
 - 1. Joint firestopping systems that are compatible with one another, with the substrates forming openings, and with penetrating items, if any.
 - 2. Provide products that, upon curing, do not re-emulsify, dissolve, leach, breakdown, or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture.
 - 3. Provide firestop products that do not contain ethylene glycol.
 - 4. 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. 3M Fire Protection Products.
 - b. Hilti, Inc.
 - c. RectorSeal, a CSW Industrials company.
- B. Intumescent Gypsum Wall Framing Gaskets (Applied to Steel Tracks, Runners and Studs prior to Framing Installation): Provide products with fire, smoke, and acoustical ratings that allow movement up to 100 percent compression and/or extension in accordance with UL 2079 or ASTM E1966; have an L Rating less than 1 cfm/ft. in accordance with UL 2079; and a minimum Sound Transmission Class (STC) rating of 56 in accordance with ASTM E90 or ASTM C919.
- C. For aluminum curtain-wall assemblies with one- or two-piece rectangular mullions at least 2-1/2 by 5 inches, provide perimeter fire-barrier system that does not require direct screw attachment to mullions and transoms to support and fasten curtain-wall insulation. System to be tested in accordance with ASTM E2307 for up to 2-hour fire resistance and with ASTM E1233 for wind cycling equivalent to 108 mph wind for 500 cycles.
- D. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E1966 or UL 2079.
 - 1. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.
- E. Joints at Exterior Curtain-Wall/Floor Intersections: Provide joint firestopping systems with rating determined per ASTM E2307.
 - 1. F-Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.

- F. Joints in Smoke Barriers: Provide joint firestopping systems with ratings determined per UL 2079 based on testing at a positive pressure differential of 0.30-inch wg.
 - 1. L-Rating: Not exceeding 5.0 cfm/ft. of joint at both ambient and elevated temperatures.
- G. 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.

2.4 ACCESSORIES

- A. 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.

- C. Apply a suitable bond-breaker to prevent three-sided adhesion in applications where this condition occurs, such as the intersection of a gypsum wall to floor or roof assembly where the joint is backed by a steel ceiling runner or track.

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. Wall Identification: Permanently label walls containing 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 ft. from end of wall and at intervals not exceeding 30 ft.
- B. 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. Special Inspections: Special Inspections are required for the work of this Section. Refer to Division 01 Section "Quality Requirements" and its attachments.
 - 1. 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. Proceed with enclosing joint firestopping systems with other construction only after 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.

3.7 JOINT FIRESTOPPING SYSTEM SCHEDULE

- A. Where UL-classified systems are indicated, they refer to system numbers in UL's online directory "Product iQ" under product Category XHBN.
- B. Floor-to-Floor, Joint Firestopping Systems:
 - 1. UL-Classified Systems:
 - a. FF-D- 0000-0999.
- C. Wall-to-Wall, Joint Firestopping Systems:
 - 1. UL-Classified Systems:
 - a. WW-D- 0000-0999.
- D. Floor-to-Wall, Joint Firestopping Systems:
 - 1. UL-Classified Systems:
 - a. FW-D- 0000-0999.

E. Head-of-Wall, Fire-Resistive Joint Firestopping Systems:

1. UL-Classified Systems:

a. HW-D- 0000-0999.

2. UL-Classified Perimeter Fire-Containment Systems:

a. CW-D- 0000-0999.

END OF SECTION 07 84 43

SECTION 07 92 00 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Latex joint sealants.
 - 5. Acoustical joint sealants.
 - 6. Preformed joint seals.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
 - 1. Cylindrical sealant backings.
 - 2. Bond-breaker tape.
 - 3. Primers.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Silicone joint sealants.
 - 2. Urethane joint sealants.
 - 3. Mildew-resistant joint sealants.
 - 4. Latex joint sealants.
 - 5. Acoustical joint sealants.
 - 6. Preformed joint seals.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each product exposed to view.

- D. 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.
- E. 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.

1.5 MOCKUPS

- A. 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.

1.6 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.

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: Sealants and sealant primers shall comply with the following:
 - 1. Architectural sealants shall have a VOC content of 250 g/L or less.
 - 2. Sealants and sealant primers for nonporous surfaces shall have a VOC content of 250 g/L or less.
 - 3. Sealants and sealant primers for porous substrates shall 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. Multiple colors may be selected.

2.2 SILICONE JOINT SEALANTS

- A. Silicone Joint Sealants: Single-component, nonsag, plus 100 percent and minus 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C920, Type S, Grade NS, Class 100/50, Use NT.
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. Dow Chemical Company (The); DOWSIL790 Silicone Building Sealant.
 - b. GE/Momentive Performance Materials Inc.; SCS2700 SilPruf LM.
 - c. Pecora Corporation; 890NST.
 - d. Tremco Incorporated; Spectrem 1.
 2. Joint-Sealant Application: Joints in vertical surfaces.
 - a. Exterior Joint Locations:
 - 1) Construction joints in cast-in-place concrete.
 - 2) Control and expansion joints in unit masonry.
 - 3) Joints in exterior insulation and finish systems.
 - 4) Joints between different materials listed above.
 - 5) Perimeter joints between materials listed above and frames of exterior openings.
 - 6) Other joints as indicated.
 - b. Interior Joint Locations:
 - 1) Control and expansion joints on exposed interior surfaces of exterior walls.
 - 2) Perimeter joints of exterior openings.
 - 3) Other joints as indicated.

2.3 URETHANE JOINT SEALANTS

- A. Urethane Joint Sealants, Nontraffic-Use: 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, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Master Builders Solutions; MasterSeal TX 1.
 - b. Polymeric Systems, Inc.; Flexiprene 1000.
 2. Joint-Sealant Application: Joints up to 1 inch wide in horizontal nontraffic surfaces.
 - a. Exterior Joint Locations:
 - 1) Control and expansion joints in ceilings and other overhead surfaces.
 - 2) Other joints as indicated.

- b. Interior Joint Locations:
 - 1) Control and expansion joints in ceilings and other overhead surfaces.
 - 2) Other joints as indicated.
- B. Urethane Joint Sealants, Traffic-Use: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic--use, urethane joint sealant; ASTM C920, Type S, Grade P, Class 25, Use T.
 - 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. Master Builders Solutions; MasterSeal SL 1.
 - b. Polymeric Systems, Inc.; Flexiprene PSI-952.
 - c. Sherwin-Williams Company (The); Loxon SL1.
 - 2. Joint-Sealant Application: Joints up to 1 inch wide in horizontal traffic surfaces.
 - a. Exterior Joint Locations:
 - 1) Isolation and contraction joints in cast-in-place concrete slabs.
 - b. Interior Joint Locations:
 - 1) Isolation joints in cast-in-place concrete slabs.

2.4 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 Joint Sealants, Mildew Resistant: 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, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Dow Chemical Company (The); DOWSIL786 Silicone Sealant.
 - b. GE/Momentive Performance Materials Inc.; SCS1700 Sanitary.
 - 2. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces.
 - a. Joint Sealant Location:
 - 1) Other joints as indicated.

2.5 LATEX JOINT SEALANTS

A. Acrylic Latex Joint Sealants: Acrylic latex or siliconized acrylic latex, ASTM C834, Type OP.

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; AC-20 +Silicone.
 - b. Tremco Incorporated; Tremflex 834.
2. Joint-Sealant Application: Interior joints in vertical surfaces not subject to significant movement.
 - a. Joint Locations:
 - 1) Vertical joints on exposed surfaces of interior unit masonry concrete and gypsum board.
 - 2) Perimeter joints between interior wall surfaces and frames of openings.
 - 3) Other joints as indicated.

2.6 ACOUSTICAL JOINT SEALANTS

A. Acoustical Joint Sealants 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, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Grabber Construction Products; Grabber Acoustical Sound Sealant.
 - b. Pecora Corporation; AC-20 FTR.
 - c. USG Corporation; Sheetrock Brand Acoustical Sealant.

2.7 PREFORMED JOINT SEALS

A. Preformed Joint Seals: Manufacturer's standard pre-compressed, elastomeric-coated foam preformed joint seal, for non-invasive installation in joint of nominal joint width as indicated on Drawings, with plus 50 percent and minus 50 percent movement capability.

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. EMSEAL Joint Systems, Ltd; Seismic Colorseal.
 - b. Nystrom, Inc.; Seismic Compression Seal.
 - c. Watson Bowman Acme Corp.; a BASF affiliate; WaboSeismicWeatherSeal.

2. Joint-Seal Application: Exterior joints in vertical surfaces.

a. Joint Locations:

1) Where indicated.

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.
- B. Cylindrical Sealant Backings: ASTM C1330, Type C (closed-cell material with a surface skin), Type O (open-cell material) or either 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.
 - 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.
- 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 INSTALLATION OF ACOUSTICAL JOINT SEALANTS

- A. Comply with acoustical joint-sealant manufacturer's written installation instructions unless more stringent requirements apply.
- B. Stud Partition 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.

3.5 INSTALLATION OF PREFORMED JOINT SEALS

- A. General: Comply with preformed joint seal manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Installation of Preformed Joint Seals:
 - 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 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.

3.6 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.

3.7 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 correct damaged or deteriorated joint sealants immediately so installations with corrected areas are indistinguishable from original work.

END OF SECTION 07 92 00

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 Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Interior standard steel doors and frames.

1.3 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings according to ANSI/SDI A250.8. (Nominal gage equivalents are listed in parentheses.)

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 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals (except field quality-control reports) required by this Section and by Division 08 Sections "Door Hardware" and "Glazing" concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance ratings, and finishes.
 - 1. Interior standard steel doors and frames.
 - 2. Borrowed lights.
 - 3. Frame anchors.

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 anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing. Indicate which side of each door or frame has a removable stop.

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. Field quality control reports.

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.
- B. Deliver welded frames with two removable spreader bars across bottom of frames.
- 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, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Ceco Door; ASSA ABLOY.
 2. Curries Company; ASSA ABLOY.

3. Pioneer Industries.
4. Steelcraft; an Allegion brand.

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.
- B. Fire-Rated, Borrowed-Lite Assemblies: Assemblies complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

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. At all interior locations.
 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 (18-gage).
 - d. Edge Construction: Model 2, Seamless, continuously welded seam dressed smooth.
 - e. Edge Bevel: Bevel lock edge 1/8 inch in 2 inches.
 - f. Core: Vertical steel stiffener. Fill space between stiffeners with glass- or mineral-fiber insulation.
 - g. Fire-Rated Core: Manufacturer's vertical steel stiffener, with space between stiffeners filled with glass- or mineral-fiber insulation or laminated mineral board core for fire-rated doors.
 2. Frames:
 - a. Materials: Uncoated steel sheet, minimum thickness of 0.053 inch (16-gage).

- b. Sidelite and Transom Frames: Fabricated from same thickness material as adjacent door frame.
 - c. Construction: Full profile welded in factory.
- 3. Exposed Finish: Prime.

2.4 BORROWED LITES

- A. Fabricate of uncoated steel sheet, minimum thickness of 0.053 inch (16-gage).
- B. Construction: Full profile welded in factory.
- C. Fabricate in one piece except where handling and shipping limitations require multiple sections. Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of metal of same or greater thickness as metal as frames.
- D. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.

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. Floor Anchors for Concrete Slabs with Underlayment: Adjustable-type anchors with extension clips, allowing not less than 2-inch height adjustment. Terminate bottom of frames at top of underlayment.
- D. 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. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Metallic-Coated Steel Sheet: ASTM A653/A653M, Commercial Steel (CS), Type B.
- D. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A153/A153M.
- E. 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.
- F. 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.
- G. Glazing: Comply with requirements in Division 08 Section "Glazing" and with hollow-metal manufacturer's requirements.
- H. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

- A. Door Astragals: Provide overlapping astragal on one leaf of pairs of doors where required by NFPA 80 for fire-performance rating or where indicated. Extend minimum 3/4 inch beyond edge of door on which astragal is mounted or as required to comply with published listing of qualified testing agency.
- B. 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. Sidelite and Transom Bar Frames: Provide closed tubular members with no visible face seams or joints, fabricated from same material as door frame. Fasten members at crossings and to jambs by welding.
 - 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 - 3. Grout Guards: Formed from same material as frames, not less than 0.016 inch thick (26-gage). Weld guards to frame at back of hardware mortises in frames to be grouted.

4. 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.
 5. Terminated Stops (Hospital Stops): Where indicated, on interior door frames terminate stops 6 inches above finish floor with a 45-degree angle cut, and close open end of stop with steel sheet closure. Cover opening in extension of frame with welded-steel filler plate, with welds ground smooth and flush with frame.
- C. 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.
- D. 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 square 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 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.
- B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Remove shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make restored 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.

3.3 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.
 - c. Field apply corrosion-resistant coating to backs of frames that will be filled with grout containing antifreezing agents.
 - d. Install door silencers in frames before grouting.
 - 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. Metal-Stud Partitions: 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 where indicated; at remaining locations, solidly fill space between frames and masonry with mineral-fiber insulation.
 - a. For grouted frames, brace or fasten frames in such a manner that will prevent the pressure of grout from deforming the frame members. Hand trowel grout into place. Grout mixed to a thinner, "pumpable" consistency is not acceptable.
6. Concrete Walls: Solidly fill space between frames and concrete with mineral-fiber insulation.
7. 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.
8. 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 Division 08 Section "Glazing" and with hollow-metal manufacturer's written instructions.

3.4 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
- C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.

- D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.5 RESTORATION

- A. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. 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.
- C. Metallic-Coated Surface Touchup: Clean abraded areas and restore with galvanizing touch-up paint according to manufacturer's written instructions.

END OF SECTION 08 11 13

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Five-ply flush wood veneer-faced doors for transparent finish.
 - 2. Factory finishing flush wood doors.
 - 3. Factory fitting flush wood doors to frames and factory machining for hardware.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 08 Sections "Door Hardware" and "Glazing" concurrently.

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 louvers.
 - 5. Door trim for openings.
 - 6. Factory-finishing 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, light and louver cutouts, and glazing thicknesses.
 - 3. Details of electrical raceway and preparation for electrified hardware, access control systems, and security systems.
 - 4. Dimensions and locations of blocking for hardware attachment.
 - 5. Dimensions and locations of mortises and holes for hardware.
 - 6. Clearances and undercuts.
 - 7. Requirements for veneer matching.
 - 8. Doors to be factory finished and application requirements.

C. Samples:

1. Factory finishes applied to actual door face materials, approximately 8 by 10 inches, for each material and finish. For each wood species and transparent finish, provide set of three Samples showing typical range of color and grain to be expected in finished Work.

D. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality-control reports.

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 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 temperature and relative humidity are maintained at levels designed for building occupants for the remainder of construction period.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to correct 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 correction or replacement of defective doors.
 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Fire-Rated Wood 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 in accordance with UL 10C or NFPA 252.
 - 1. Temperature-Rise Limit: At vertical exit enclosures and exit passageways, provide doors that have a maximum transmitted temperature end point of not more than 450 deg F above ambient after 30 minutes of standard fire-test exposure.
- 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.
 - 1. The Contract Documents contain requirements that may be more stringent than the referenced quality standard. Comply with the Contract Documents in addition to those of the referenced quality standard.

2.3 SOLID-CORE FIVE-PLY FLUSH WOOD VENEER-FACED DOORS FOR TRANSPARENT 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:
 - a. Marshfield-Algoma by Masonite Architectural.
 - b. Oshkosh Door Company.
 - c. VT Industries, Inc.
 - 2. Performance Grade: ANSI/WDMA I.S. 1A Extra Heavy Duty.
 - 3. ANSI/WDMA I.S. 1A Grade: Custom.
 - 4. Faces: Single-ply, wood veneer not less than 1/50 inch thick.
 - a. Species:
 - 1) Select white maple at Copper Beech Middle School.
 - 2) Red oak at Lakeland High School and Walter Panas High School.
 - b. Cut: Plain sliced (flat sliced).

- c. Match between Veneer Leaves: Book match.
 - d. Assembly of Veneer Leaves on Door Faces: Center-balance match.
 - e. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
5. Exposed Vertical and Top Edges: Same species as faces - Architectural Woodwork Standards edge Type A.
- 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. WDMA I.S. 10 structural composite lumber.
 - 1) Screw Withdrawal, Door Face: 550 lbf.
 - 2) Screw Withdrawal, Vertical Door Edge: 550 lbf.
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 LIGHT FRAMES AND LOUVERS

- A. Wood Beads for Light Openings in Wood Doors: Provide manufacturer's standard wood beads at Copper Beech Middle School.
 - 1. Wood Species: Same species as door faces.
 - 2. Profile: Flush rectangular beads.
 - 3. At wood-core doors with 20-minute fire-protection ratings, provide wood beads and metal glazing clips approved for such use.

- B. Wood-Veneered Beads for Light Openings in Fire-Rated Door at Copper Beech Middle Schools: Manufacturer's standard wood-veneered noncombustible beads matching veneer species of door faces and approved for use in doors of fire-protection rating indicated on Drawings. Include concealed metal glazing clips where required for opening size and fire-protection rating indicated.
- C. Metal Frames for Light Openings at Walter Panas High School and Lakeland High School in Fire-Rated Doors: Manufacturer's standard frame formed of 0.036-inch-thick (20 gage), cold-rolled steel sheet; factory primed for paint finish; and for fire-rated doors, approved for use in doors of fire-protection rating indicated on Drawings.
- D. Metal Louvers:
 - 1. Blade Type: Vision-proof, inverted Y.
 - a. Metal and Finish: Cold-rolled steel, 0.048-inch-thick (18 gage) frame and not less than 0.030-inch thick (22 gage) blades, factory primed for paint finish.

2.5 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. Metal Astragals: Factory machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- C. Openings: Factory cut and trim openings through doors.
 - 1. Light Openings: Trim openings with moldings of material and profile indicated.
 - 2. Glazing: Factory install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."
 - 3. Louvers: Factory install louvers in prepared openings.

2.6 FACTORY FINISHING

- A. Comply with referenced quality standard for factory finishing.
 - 1. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.

2. Finish faces, all four edges, edges of cutouts, and mortises.
 3. Stains and fillers may be omitted on bottom edges, edges of cutouts, and mortises.
- B. Factory finish doors.
- C. Transparent Finish:
1. ANSI/WDMA I.S. 1A Grade: Custom.
 2. Finish: ANSI/WDMA I.S. 1A TR-8 UV Cured Acrylated Polyester/Urethane
 3. Staining: As selected by Architect from manufacturer's full range.
 - a. Separate stains may be selected for each building.
 4. Effect: Semifilled finish, produced by applying an additional finish coat to partially fill the wood pores.
 5. Sheen: Satin.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Install doors to comply with manufacturer's written instructions and referenced quality standard, and as indicated.
1. Install fire-rated doors in accordance with NFPA 80.
 2. Install smoke- and draft-control doors in accordance with NFPA 105.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 - 1. Fire-Rated Door Inspections: Inspect each fire-rated door in accordance with NFPA 80, Section 5.2.
- C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.4 ADJUSTING

- A. Operation: Rehang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be corrected or refinished if Work complies with requirements and shows no evidence of correction or refinishing.

END OF SECTION 08 14 16

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 Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes access doors and frames for walls and ceilings.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, fire ratings, material descriptions, dimensions of individual components and profiles, and finishes.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:
 - 1. Flush access doors with exposed flanges.
 - 2. Fire-rated, flush access doors with exposed flanges.
- C. Product Schedule: For access doors and frames. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Field quality control reports.

1.6 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 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 and temperature-rise limit ratings indicated, according to NFPA 252 or UL 10B.

2.2 ACCESS DOORS AND FRAMES

A. Flush Access Doors with Exposed Flanges:

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Karp Associates, Inc.; Model DSC-214M Universal Flush Access Door.
 - b. Milcor Company; Series M – Architectural Grade Flush Steel Access Door.
 - c. Nystrom, Inc.; NT Architectural Access Door.
2. Description: Face of door flush with frame, with exposed flange and concealed hinge.
3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:
 - a. In painted CMU exposed to view.
 - b. In ceramic tile exposed to view.
 - c. Concealed locations not exposed to view (i.e., above lay-in ceilings and in mechanical and other utility rooms).
4. Door Size: 12”x12”, unless otherwise indicated.
5. Uncoated Steel Sheet for Door: Nominal 0.075 inch (14 gage), factory primed.
6. Frame Material: Same material and finish as door; nominal 0.060 inch (16 gage).
7. Latch and Lock: Cam latch, screwdriver operated with interior release.
 - a. In painted CMU exposed to view.
 - b. In painted gypsum board or plaster exposed to view.

2.3 FIRE-RATED ACCESS DOORS AND FRAMES

A. Fire-Rated, Flush Access Doors with Exposed Flanges

1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Karp Associates, Inc.; Model KRP-150FR Universal Fire Rated Access Door.
 - b. Milcor Company; Series UFR – Universal Fire-Rated Access Door.
 - c. Nystrom, Inc.; IT Insulated Fire-Rated Access Door.

2. Description: Door face flush with frame, with a core of mineral-fiber insulation enclosed in sheet metal; with exposed flange, self-closing door, and continuous piano hinge.
3. Locations: Walls, where indicated on Drawings and, if not indicated, as follows:
 - a. In fire-rated construction.
4. Door Size: 12"x12", unless otherwise indicated.
5. Fire-Resistance Rating: Not less than 1-1/2 hours.
6. Temperature-Rise Rating: 250 deg F at the end of 30 minutes.
7. Uncoated Steel Sheet for Door: Nominal 0.036 inch (20 gage), factory primed.
8. Frame Material: Same material and finish as door; nominal 0.060 inch (16 gage).
9. Latch and Lock: Self-latching door hardware, operated by key with interior release.

2.4 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. Frame Anchors: Same material as door face.
- D. Inserts, Bolts, and Anchor Fasteners: Hot-dip galvanized steel according to ASTM A153/A153M or ASTM F2329.

2.5 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.

2.6 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, baked-enamel or powder-coat primer immediately after surface preparation and pretreatment.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions for installing access doors and frames.

3.3 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 - 1. Fire-Rated Door Inspections: Inspect each fire-rated access door in accordance with NFPA 80, section 5.2.
- C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.

- E. Prepare and submit separate inspection report for each fire-rated access door indicating compliance with each item listed in NFPA 80.

3.4 ADJUSTING

- A. Adjust doors and hardware, after installation, for proper operation.

END OF SECTION 08 31 13

SECTION 08 41 13 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Aluminum-framed storefront systems.
 - 2. Entrance door systems.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Entrance door hardware.
 - 2. Accessories.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Thermally broken framing.
 - 2. Nonthermal framing.
 - 3. Thermal entrance doors.
 - 4. Nonthermal entrance doors.
 - 5. Flush entrance doors.
- C. 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. Show provisions for coordination with door hardware.
- D. Samples: For each type of exposed finish required, in manufacturer's standard sizes.
- E. Sample Warranties: For special warranties.

1.5 INFORMATIONAL SUBMITTALS

- A. 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.
- B. Performance Reports: For fiberglass reinforced polyester (FRP) face sheet doors, showing compliance with fire-performance and door construction requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
- B. Warranties: Executed special warranties.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. 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.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to correct 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 restore 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. Source Limitation: Obtain all components of aluminum-framed entrance and storefront system, including framing and accessories, and entrance doors when available, from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. 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.

- B. 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.
 - a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.
- C. 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.
- D. 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 10 lbf/sq. ft.
- E. Energy Performance: Certified and labeled by manufacturer for energy performance as follows:
1. Thermal Transmittance (U-factor):
 - a. Thermal 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.
 - b. Flush Entrance Doors: U-factor of not more than 0.61 Btu/sq. ft. x h x deg F as determined according to NFRC 100.
 2. Solar Heat-Gain Coefficient (SHGC):
 - a. Thermally Broken Fixed Glazing and Framing Areas: SHGC for the system of not more than 0.36 as determined in accordance with NFRC 200.
 - b. Thermal Entrance Doors: SHGC of not more than 0.36 as determined in accordance with NFRC 200.

3. Air Leakage:

- a. Thermally Broken 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 6.24 lbf/sq. ft. when tested in accordance with ASTM E283 or NFRC 400.
- b. Thermal and Flush 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.

4. Condensation Resistance Factor (CRF):

- a. Thermally Broken Fixed Glazing and Framing Areas: CRF for the system of not less than 62 as determined in accordance with AAMA 1503.
- b. Thermal Entrance Doors: CRF of not less than 40 as determined in accordance with AAMA 1503.

F. 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, GENERAL

A. 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 Framing Construction: Nonthermal.
- 3. Glazing System: Retained mechanically with gaskets on four sides.
- 4. Glazing Plane: Center.
- 5. Finish: High-performance organic finish.
- 6. Fabrication Method: Field-fabricated stick system.
- 7. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
- 8. Steel Reinforcement: As required by manufacturer.

B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.

C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum with nonstaining, nonferrous shims for aligning system components.

D. Insulated Spandrel Panels: Comply with Division 08 Section "Glazing."

2.4 STOREFRONT SYSTEM TYPES

A. Types: Provide the following types in locations indicated on Drawings:

1. Thermally broken framing.
2. Nonthermal framing.

2.5 THERMALLY BROKEN FRAMING

A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1. EFCO Corporation; System 406X Dual-Thermal Flush-Glazed Storefront.
2. Kawneer; Trifab 601UT Framing System.
3. YKK AP America Inc.; YES 60 XT Storefront System.

B. Framing Size: 2-inch by 6- to 6-1/2-inch.

C. Separate Finish and/or color may be selected at each building.

2.6 NONTHERMAL FRAMING

A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1. EFCO Corporation; System 402 Flush-Glazed Storefront.
2. Kawneer; Trifab VersaGlaze 450 (2-inch Sightline) Framing System.
3. Special-Lite, Inc.; SL- 245 FG Flush Glazed Tube Framing.
4. YKK AP America Inc.; YES 45 FI Storefront System.

B. Framing Size: 2-inch by 4-1/2-inch.

2.7 ENTRANCE DOOR SYSTEMS, GENERAL

A. Entrance Doors: Manufacturer's standard glazed and flush entrance doors for manual-swing operation.

B. Door Construction:

1. Thermal Entrance Door Construction: Glazed entrance doors with 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.
 - a. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.

2. Nonthermal Entrance Door Construction: Glazed entrance doors with 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.
3. Flush Entrance Door Construction: Aluminum Fiberglass reinforced polyester (FRP) face sheet with poured-in-place or frothed-in-place urethane insulation and interlocked into extruded-aluminum rail and stile members to conceal edges of face sheets.
 - a. Aluminum Face Sheet: 0.062- to 0.090-inch-thick smooth aluminum.
 - b. Fiberglass Reinforced Polyester (FRP) Face Sheet: 0.120-inch-thick pebble-textured FRP.
 - 1) FRP door construction must comply with NYS 2020 uniform code 2603.4.1.7 or have special approval per NYS 2020 uniform code 2603.9.
 - 2) Surface-Burning Characteristics: For FRP face sheets facing the interior, surface-burning characteristics as follows when tested by a qualified testing agency according to ASTM E 84. Identify products with appropriate markings of applicable testing agency.
 - a) Flame-Spread Index: 25 or less.
 - b) Smoke-Developed Index: 450 or less.
4. Glazing Stops and Gaskets: Square, snap-on, extruded-aluminum stops and preformed gaskets.
 - a. Provide nonremovable glazing stops on outside of door.
5. Finish: Separate finishes may be selected at each building

2.8 ENTRANCE DOOR TYPES

- A. Types: Provide the following entrance door types in locations indicated on Drawings:

1. Thermal entrance doors.
2. Nonthermal entrance doors.
3. Flush entrance doors.

2.9 THERMAL ENTRANCE DOORS

- A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:

1. EFCO Corporation; Series D302 Medium Stile ThermaStile Entrances.
2. Kawneer; 350T Insulpour Thermal Entrances.
3. YKK AP America Inc.; MegaTherm 35XT Medium Stile Entrances.

- B. Depth: 2- to 2-3/8-inch.

- C. Door Design: Medium stile, 3-1/2-inch nominal width.
- D. Bottom Rail: Height to comply with accessibility requirements.

2.10 NONTHERMAL ENTRANCE DOORS

- A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1. EFCO Corporation; Series D300 Medium Stile Entrance Door.
 - 2. Kawneer; 350 Medium Stile Standard Entrance.
 - 3. YKK AP America Inc.; Series 35D Medium Stile Swing Doors.
- B. Depth: 1-3/4-inch.
- C. Door Design: Medium stile, 3-1/2-inch nominal width.
- D. Bottom Rail: Height to comply with accessibility requirements.

2.11 FLUSH ENTRANCE DOORS

- A. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1. Aluminum Face Sheet Doors:
 - a. Kawneer; Flushline Entrances.
 - b. Special-Lite, Inc.; SL-16 Aluminum Flush Door.
 - 2. Fiberglass Reinforced Polyester (FRP) Face Sheet Doors:
 - a. FRP Architectural Doors Inc.; FD25 Heavy Duty FRP Faced Door.
 - b. Special-Lite, Inc.; SL-17 Pebble Grain FRP/Aluminum
- B. Depth: 1-3/4-inch.
- C. Color: As selected by Architect from manufacturer's full range.

2.12 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."
- B. General: Provide entrance door hardware and entrance door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.

1. Opening-Force Requirements:

- a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
- b. Accessible Interior Doors: Not more than 5 lbf to fully open door.

C. Weather Stripping: Manufacturer's standard replaceable components.

- 1. Compression Type: Made of ASTM D2000 molded neoprene or ASTM D2287 molded PVC.
- 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

D. Weather Sweeps: Manufacturer's standard exterior-door bottom sweep with concealed fasteners on mounting strip.

E. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.13 GLAZING

- A. Glazing: Comply with Division 08 Section "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.

2.14 MATERIALS

- A. Sheet and Plate: ASTM B209.
- B. Extruded Bars, Rods, Profiles, and Tubes: ASTM B221.
- C. Structural Profiles: ASTM B308/B308M.
- D. 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.

2.15 ACCESSORIES

- A. 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.
- B. 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.
- C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.
- D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.16 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. Provisions for field replacement of glazing.
 - 6. 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. Blade-type stops are not acceptable.

- 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.

2.17 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.
 - a. Separate colors may be selected at each building.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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. Set continuous sill members and flashing in full sealant bed, as specified in Division 07 Section "Joint Sealants," to produce weathertight installation.
- I. Install joint filler behind sealant as recommended by sealant manufacturer.
- J. Install components plumb and true in alignment with established lines and grades.

3.3 INSTALLATION OF OPERABLE UNITS

- A. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

3.4 INSTALLATION OF GLAZING

- A. Install glazing as specified in Division 08 Section "Glazing."

3.5 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.

3.6 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.

3.7 MAINTENANCE SERVICE

A. Entrance Door Hardware Maintenance:

- 1. 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 entrance door hardware.

END OF SECTION 08 41 13

SECTION 08 46 00 – FIRE-RATED GLAZED OPENING ASSEMBLIES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-protection-rated glazed opening assemblies.
 - 2. Fire-resistance-rated storefront systems.

1.3 DEFINITIONS

- A. Fire-Protection Rating: The period of time that an opening protective will maintain the ability to confine a fire as determined by tests specified in Section 716 of the building Code in effect for the Project.
- B. Fire-Rated Glazed Opening Assemblies: Glazed opening assemblies configured as either possessing a fire-protection rating or a fire-resistance rating.
- C. Fire-Resistance Rating: The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by tests, or the methods based on tests, prescribed in Section 703 of the building Code in effect for the Project.

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.
 - 2. Review and discuss the finishing of fire-rated glazed opening assemblies that is required to be coordinated with the finishing of other similar work for color and finish matching.
 - 3. Review, discuss, and coordinate the interrelationship of fire-rated glazed opening assemblies with other exterior wall components. Include provisions for anchoring, flashing, weeping, sealing perimeters, and protecting finishes.
 - 4. Review and discuss the sequence of work required to construct a watertight and weathertight exterior building envelope.
 - 5. Inspect and discuss the condition of substrate and other preparatory work performed by other trades.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 08 Sections “Door Hardware” and “Glazing” concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Door hardware.
 - 2. Accessories.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Fire-protection-rated glazed opening assemblies, 20-minute, interior.
 - 2. Fire-protection-rated glazed opening assemblies, 45-minute, interior.
 - 3. Fire-resistance-rated storefront systems, 60-minute, interior.
- C. Shop Drawings: For fire-rated glazed opening assemblies. Include plans, elevations, sections, full-size details, and attachments to other work.
 - 1. Show provisions for coordination with door hardware
- D. Samples: For each type of exposed finish required, in manufacturer’s standard sizes.
- E. Product Schedule: For fire-rated glazed opening assemblies. Use same designations as indicated on Drawings.
- F. Sample Warranty: For special warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For fire-rated glazed opening assemblies to include in maintenance manuals.
- B. Executed Warranty: For special warranty.
- C. Record Documents: List of door numbers and applicable room name and number to which door accesses.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. 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.

1.9 COORDINATION

- A. Coordinate requirements for installation of door hardware, per manufacturer's requirements.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of fire-rated glazed opening assemblies 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, metal finishes, and other materials beyond normal weathering.
 - d. Water penetration through fixed glazing and framing areas.
 - e. Failure of operating components.
 2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain fire-rated glazed opening assemblies, including doors, frames, and other items essential for fire-rating from single source from single manufacturer. Obtain glazing from single manufacturer acceptable to the door assembly manufacturer, for each fire-rated glazed opening assembly.

2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Comply with performance requirements specified, as determined by testing of fire-rated glazed opening assemblies representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 1. Fire-rated glazed opening assemblies shall withstand movements of supporting structure including, but not limited to, story drift, 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.
- B. 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.
- C. Fire-Protection-Rated Door Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.
- D. Fire-Resistance-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-resistance ratings indicated, based on testing according to ASTM E119 or UL 263.

2.3 FIRE-PROTECTION-RATED GLAZED OPENING ASSEMBLIES

- A. Fire-Protection-Rated Glazed Opening Assemblies: 45-minute, interior, fire-protection-rated glazed opening assemblies. Provide the following:
 - 1. Aluminum Units:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or comparable product:
 - 1) Aluflam North America; Fire-Rated Full Vision Doors.
 - a) Glazing for Interior Units: Vetrotech Saint-Gobain; Contraflam 45 (Glass Type FPI) as specified in Division 08 Section "Glazing."
 - b) Finish: As selected by Architect from full range of industry finishes.

2.4 FIRE-RESISTANCE-RATED STOREFRONT SYSTEMS

- A. Fire-Resistance-Rated Storefront Systems: 60-minute, interior, fire-resistance-rated storefront systems. Provide the following:
 - 1. Aluminum Units:
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide the following, or comparable product:
 - 1) Aluflam North America; Fire-Rated Aluminum Vision Wall System VW-EI60.
 - a) Glazing for Interior Units: Vetrotech Saint-Gobain; Contraflam 60 (Glass Type FRI or FRI-2) as specified in Division 08 Section "Glazing."
 - b) Finish: As selected by Architect from full range of industry finishes

2.5 DOOR HARDWARE

- A. Door Hardware: Hardware not specified in this Section is specified in Division 08 Section "Door Hardware."
- B. General: Provide door hardware and door hardware sets indicated in door and frame schedule for each entrance door, to comply with requirements in this Section.
 - 1. Opening-Force Requirements:
 - a. Egress Doors: Not more than 15 lbf to release the latch and not more than 30 lbf to set the door in motion and not more than 15 lbf to open the door to its minimum required width.
 - b. Accessible Interior Doors: Not more than 5 lbf to fully open door.
- C. Weather Stripping: Manufacturer's standard replaceable components.
 - 1. Compression Type: Made of ASTM D 2000 molded neoprene or ASTM D 2287 molded PVC.
 - 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.
- D. Weather Sweeps: Manufacturer's standard adjustable exterior-door bottom sweep with concealed fasteners on mounting strip.
- E. Thresholds: BHMA A156.21 raised thresholds beveled with a slope of not more than 1:2, with maximum height of 1/2 inch.

2.6 GLAZING

- A. Glazing: Comply with Division 08 Section "Glazing."
- B. Glazing Gaskets: As recommended by manufacturer.
- C. Glazing Sealants: As recommended by manufacturer.

2.7 MATERIALS

- A. Aluminum:
 - 1. Sheet and Plate: ASTM B 209.
 - 2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
 - 3. Extruded Structural Pipe and Tubes: ASTM B 429/B 429M.
 - 4. Structural Profiles: ASTM B 308/B 308M.
- B. Steel:
 - 1. Structural Shapes, Plates, and Bars: ASTM A 36/A 36M.
 - 2. Cold-Rolled Sheet and Strip: ASTM A 1008/A 1008M.

3. Hot-Rolled Sheet and Strip: ASTM A 1011/A 1011M.
4. 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 according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.

2.8 ACCESSORIES

- A. 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.
- B. 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 A 123/A 123M or ASTM A 153/A 153M requirements.
- C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.
- D. Bituminous Paint: Cold-applied asphalt-mastic paint containing no asbestos, formulated for 30-mil thickness per coat.

2.9 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. Provisions for field replacement of glazing from interior.
 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Door Frames: Reinforce as required to support loads imposed by door operation and for installing door hardware.

- E. Doors: Reinforce doors as required for installing 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.
- F. Door Hardware Installation: Factory install door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed door hardware before applying finishes.
 - 1. Coordinate cylinder core with Fire Rated Glazed Opening Assembly manufacturer for correct housing
- G. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings

2.10 GENERAL FINISH REQUIREMENTS

- A. Comply with NAAMM's "Metal Finishes Manual" 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.

2.11 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
 - 1. Color: As selected by Architect from full range of industry colors and color densities.
- C. 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, areas, 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

B. 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.

C. Set continuous sill members and flashing in full sealant bed, as specified in Division 07 Section "Joint Sealants," to produce weathertight installation.

D. Install components plumb and true in alignment with established lines and grades.

E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

F. Install glazing as specified in Division 08 Section "Glazing."

G. Doors: Install 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 Door Hardware: Install surface-mounted door hardware according to door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.3 ERECTION TOLERANCES

A. Erection Tolerances: Install fire-rated glazed opening assemblies 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.

3.4 FIELD QUALITY CONTROL

- A. Inspection Agency: Engage a qualified inspector to perform inspections and to furnish reports to Architect.
- B. Inspections:
 1. Fire-Rated Door Inspections: Inspect each fire-rated door according to NFPA 80, Section 5.2.
- C. Correct or remove and replace installations where inspections indicate that they do not comply with specified requirements.
- D. Reinspect corrected or replaced installations to determine if replaced or corrected door assembly installations comply with specified requirements.
- E. Prepare and submit separate inspection report for each fire-rated door assembly indicating compliance with each item listed in NFPA 80.

3.5 ADJUSTING, CLEANING, AND PROTECTION

- A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow-metal work that is warped, bowed, or otherwise unacceptable.
- B. 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.

3.6 MAINTENANCE SERVICE

- A. Door Hardware:
 1. 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

END OF SECTION 08 46 00

SECTION 08 62 00 - SKYLIGHTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Skylight domes.
 - 2. Tubular daylighting devices.

1.3 PREINSTALLATION MEETINGS

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

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include product dimensions, construction details, material descriptions, dimensions and profiles of components, and finishes. Include power requirements, ratings, characteristics, and mounting requirements for electrical components.
 - 1. Fasteners.
 - 2. Skylight domes.
 - 3. Fall protection screens.
 - 4. Tubular daylighting devices.
 - 5. Accessories.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, mounting, and attachment details and methods of structural support.
 - 2. Include diagrams for power, signal, and control wiring.

C. Samples: For each product, as follows:

1. Glazing: In manufacturer's standard size and of same thickness indicated for the final Work.
2. Finishes: For each type and color of factory-applied exposed finish required, in manufacturer's standard size.
3. Interior Diffuser Lens and Trim for Tubular Daylighting Device: In manufacturer's standard size and of same thickness indicated for the final Work.

D. Sample Warranties: For special warranties.

1.6 INFORMATIONAL SUBMITTALS

A. Energy Performance Certificates: For skylight domes and tubular daylighting devices, from manufacturer.

1. Basis for Certification: Energy performance values for each item meeting specified NFRC requirements.

B. Product Certificates: For skylight domes and tubular daylighting devices indicating compliance with requirements for fall protection.

1.7 CLOSEOUT SUBMITTALS

A. Maintenance Data: For products and accessories to include in maintenance manuals.

B. Warranties: Executed special warranties.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to correct or replace components of products 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. Water leakage not controlled by drainage features.
- c. Deterioration of materials and finishes beyond normal weathering.
- d. Yellowing of acrylic glazing.
- e. Breakage of polycarbonate glazing.

2. Warranty Period:

- a. Skylight Domes: 5 years from date of Substantial Completion.
- b. Tubular Daylighting Devices: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Performance Standard: Comply with AAMA/WDMA/CSA 101/1.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
 - 1. Minimum Performance Class and Grade: Class CW-PG 70.
 - 2. Structural Loads: As indicated on Drawings.
 - 3. Label Requirements: Label each product with names of manufacturer and labeling agency and AAMA/WDMA/CSA 101/1.S.2/A440 product designation, performance grade, and test specimen size equal to or greater than the size of the product.
 - 4. Certification Requirements: Provide AAMA or WDMA certified products, with label attached to each.
- B. Thermal Transmittance:
 - 1. Unit Skylights: NFRC 100 maximum U-factor of 0.50 Btu/sq. ft. x h x deg F.
 - 2. Tubular Daylighting Devices: NFRC 100 maximum U-factor of 0.50 Btu/sq. ft. x h x deg F.
- C. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC of 0.40.
- D. Air Infiltration: Maximum air leakage rate of 0.3 cfm/sq. ft. when tested in accordance with AAMA/WDMA/CSA 101/1.S.2/A440 or NFRC 400.
- E. Plastic Glazing:
 - 1. Self-Ignition Temperature: 650 deg F or more for plastic sheets in thickness indicated when tested in accordance with ASTM D1929.
 - 2. Smoke-Production Characteristics: Smoke-developed index of 450 or less when tested in accordance with ASTM E84, and smoke density of 75 or less when tested in accordance with ASTM D2843.
 - 3. Combustibility Characteristics: Tested in accordance with ASTM D635 and classified for burning rate of nominal thickness of 0.060 inch or thickness of plastic glazing indicated for use as follows:
 - a. Class CC1: Burning rate of 1 inch per minute or less.
 - b. Class CC2: Burning rate of 2-1/2 inches per minute or less.
- F. 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.

- G. Fall-Protection Performance: Installed assemblies are capable of safely supporting the greater of 400 lbs or twice the weight of employees, equipment, and materials that may be imposed on any 1 sq. foot of the assembly at any time.

2.2 SKYLIGHT DOMES

- A. Factory-Assembled Skylight: Curb-mounted unit that includes glazing, extruded-aluminum glazing retainers, gaskets and frame.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - 2. Basis-of-Design Product: Subject to compliance with requirements, provide Velux Commercial (Wasco); EcoSky3 (double acrylic dome—white outer, clear inner dome; polycarbonate-insulating-panel with aerogel) Model CLD3, or comparable product.
 - a. Acrylic Double-Glazing Profile: Dome, 25 percent rise.
 - 1) Thicknesses of Each Glazing Layer: Not less than thickness required to meet specified requirements.
 - 2) Outer Glazing Color: White, translucent; Acrylite Satin Sky 2.
 - 3) Inner Glazing Color: Colorless, transparent.
 - b. Polycarbonate-Insulating-Panel Glazing:
 - 1) Thickness: 10 mm.
 - 2) Color: Colorless.
 - 3) Fill spaces with aerogel.
 - 3. Other manufacturers offering products meeting specified requirements include:
 - a. Wasco.
 - b. American Skylights.
- B. Product Type: AAMA/WDMA/CSA 101/1.S.2/A440 SKP, unit skylight - plastic glazed.
 - 1. Provide fixed (non-operable) units.
- C. Unit Shape and Size: Match existing curb dimensions, verify in field.
- D. Acrylic Glazing: ASTM D4802, thermoformable, monolithic sheet, category as standard with manufacturer, Finish 1 (smooth or polished), Type UVF (formulated with UV absorber); and Class CC2 based on testing in accordance with ASTM D635.
- E. Polycarbonate Glazing: Thermoformable, extruded monolithic sheets, UV resistant, burglar-resistance rated in accordance with UL 972; with average impact strength of 12 to 16 ft-lb/in. of width when tested in accordance with ASTM D256, Test Method A (Izod); and Class CC1 based on testing in accordance with ASTM D635.

- F. Polycarbonate-Insulating-Panel Glazing: Manufacturer's standard polycarbonate sheet with cellular cross section that provides isolated airspaces, coextruded with a UV-protective layer, and Class CC1 based on testing in accordance with ASTM D635. Fill airspaces with aerogel.
- G. Glazing Gaskets: Manufacturer's standard.
- H. Retainer Frame: Aluminum, clear anodic finish.
- I. Condensation Control: Fabricate skylight domes with integral internal gutters and non-clogging weeps to collect and drain condensation to the exterior.
- J. Thermal Break: Fabricate skylight domes with thermal break separating exterior and interior metal framing.
- K. Accessories:
 - 1. Fall-Protection: Provide safety cage of welded galvanized- or stainless-steel wire mesh, 4-inch by 4-inch spacing, for exterior mounting over skylight.
- L. Aluminum Finishes:
 - 1. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

2.3 TUBULAR SKYLIGHTS

- A. General: Provide manufactured tubular skylights with exterior glazed dome, glazing retainers and gaskets, exterior curb counterflashing assembly with integral adjustable pivot device, reflective tunnel, interior diffuser assemblies, and accessories that are capable of withstanding performance requirements indicated.
- B. Basis-of-Design Product: Subject to compliance with requirements, provide VELUX America, Inc.; Model TCC Commercial Curb Mount Sun Tunnel Skylight system or comparable product.
- C. Roof Curb Counterflashing: One-piece, formed galvanized-steel sheet, 0.023-inch thick.
 - 1. Finish: Powder-coated.
 - 2. Flashing Insulator: Manufacturer's standard closed-cell thermal isolation material affixed to underside of curb mount flashings.
 - 3. Intermediate Ring: High-impact plastic reflective tunnel receiver attached to top roof curb counterflashing base serving as mounting base for dome assembly and providing a thermal break between counterflashing base and reflective tunnel, configured to channel condensed moisture out of assembly.
 - a. Intermediate Ring Seal: Santoprene O-ring providing weather-tight seal with roof curb counterflashing.
 - b. Pivot Ring and Reflective Tunnel Collar: High-impact plastic pivoting socket mounts in intermediate ring and secures to factory-installed tunnel collar; adjustable to allow increased adjustability for proper alignment of tunnel sections.

D. Flashing Accessories:

1. Manufacturer's standard turret risers, height indicated on Drawings, matching counterflashing metal and finish.
2. Fire Band: Dome edge protection band, as required for installation in fire-resistance-rated roof assemblies; matching counterflashing metal and finish.

E. Unit Shape and Size: Round 22-inch nominal tunnel diameter.

F. Polycarbonate Glazing: Injection molded or extruded monolithic sheets.

1. Exterior Dome: Tall dome.
 - a. Thickness: Not less than thickness required to exceed performance requirements.
2. Self-Ignition Temperature: 650 deg F or more for plastic sheets in thickness indicated when tested according to ASTM D1929.
3. Smoke-Production Characteristics: Smoke-developed index of 450 or less when tested according to ASTM E84, and smoke density of 75 or less when tested according to ASTM D2843.
4. Burning Characteristics: Tested according to ASTM D635. Class CC1, burning extent of 1 inch or less for nominal thickness of 0.060 inch or thickness indicated for use.

G. Daylight Directing Device: 22-inch diameter, injection molded, impact modified acrylic prism array configured to direct low-angle sunlight into tunnel and re-reflect high solar heat gain sunlight to exterior.

H. Reflective Tunnel: Skylight light shaft formed from Class II anodized aluminum sheet, 0.016-inch-thick, with silver specular interior finish surface coated with vacuum-evaporated silicone oxide and titanium oxide protective surface that protects tunnel surface from corrosion and provides a long life of reflection characteristics.

1. Diameter: As required for indicated skylight unit sizes.
2. Reflectance: 99 percent reflectance when measured in accordance with ASTM E1651 at 30 degrees from vertical. Total reflectance greater than 98 percent when measured in accordance with ASTM E1651.
3. Color Rendition, ASTM E408: As defined by CIE L*a*b* color model, L equal to 99-100, values a* and b* shall not exceed +1 or be less than -1.

I. Reflective Tunnel Components: Provide components indicated and as required for installation based on roof, ceiling, and structural member configurations, skylight and diffuser locations indicated on Drawings, and manufacturer's recommendations, and as follows:

1. Rigid Tunnel Extensions: Reflective extension tube, lengths as required for application.
2. Universal Reflective Elbows: Reflective angle adaptors adjustable to 45 degrees, 0.023-inch-thick, and mounted at top, middle, or bottom of reflective tunnel assemblies as required for application.

3. Reflective Tunnel Fastening System: Manufacturer's recommended fastening devices consisting of spring-tempered stainless-steel pull clip mechanical fasteners allowing tunnel vertical and horizontal joints to be secured without the use of screws or tools, used in conjunction with pre-located punched holes in tunnel sections, that allow for a tight naturally occurring tapered mating of interconnecting tunnel sections and elbows.
- J. Reflective Tunnel Accessories: Provide accessories indicated and as required for installation based on roof, ceiling, and structural member configuration, skylight and diffuser locations indicated on Drawings, and manufacturer's recommendations, and as follows:
1. Rotating Couplers: Rotating adaptors allowing coupling of two elbows to create 90-degree transition of tunnels using fastening system connections with rotating joint enabling alignment of tunnel sections.
 2. Commercial Energy Kit: Two clear diffusers mounted in airtight Santoprene gasketing system inserted in a round polymer housing that provides a thermal break and installs in line with building envelope insulation to isolate tunnel from exterior temperatures. Kit is affixed to tunnel with manufacturer's spring lock fasteners.
- K. Diffusers:
1. Round Diffuser Assemblies for Finished Ceiling Applications: Round ceiling diffuser assembly attached directly to bottom of tunnel, dual high visible light transmittance lenses with insulating airspace, airtight seals, and paintable white acrylic trim ring.
 - a. Size: As required for skylight sizes indicated.
 - b. Lens Type: Frosted lens, minimum 92 percent visible light transmittance.
- L. Accessories:
1. Daylight Controller: Local daylight control with reflective variable positioning paddle mounted in rigid housing. Provide for units in which daylight controllers are indicated.
 - a. Housing: Injection-molded copolymer.
 - b. Daylight Dimmer: Electromechanically actuated daylight valve with 24 V dc input voltage providing adjustable daylight output between 2 and 100 percent.
 - c. Daylight Controller and Switch: Combination power supply and DP/DT switch, 110-277 V ac input and 24 V dc output, capable of operating up to 10 daylight dimmer units. Switching allows reflective paddle to stop at any location between fully open and fully closed positions.
 2. Suspension Wire: 12-gage galvanized-steel wire.
- M. Curb: Aluminum, self-flashing type.
1. Aluminum Sheet: Alloy and temper to suit structural and finish requirements but not less than 0.032-inch thick.
 - a. Exterior Finish: Mill.

- b. Interior Finish: Mill.
- N. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.
- O. Construction:
 - 1. Curb Profile: Manufacturer's standard with integral cant, compatible with roofing system.
 - 2. Double wall, thermally-broken, with aluminum on both faces encasing insulation.
 - 3. Fabricate curbs to minimum height of 12 inches above roofing surface unless otherwise indicated.
 - 4. Top Surface: Level top of curb.
 - 5. Nailer: Factory-installed wood nailer along top flange of curb, continuous around curb perimeter.
 - 6. Insulation: Manufacturer's standard rigid or semirigid type.
 - a. R-Value: Not less than 5.7 according to ASTM C1363.
 - 7. Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a. Pate Company (The); PC-1.
- P. Condensation Control: Fabricate tubular skylights with integral internal gutters and non-clogging weeps to collect and drain condensation to the exterior.
- Q. Thermal Break: Fabricate tubular skylights with thermal barrier separating exterior and interior metal framing.
- R. Fall Protection: Provide means to comply with OSHA fall protection requirements.

2.4 ACCESSORY MATERIALS

- A. Isolation Barrier Membrane: Composite, self-adhesive, flashing product consisting of a pliable, butyl rubber compound, bonded to a polypropylene film to produce an overall thickness of not less than 0.014 inch.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide GCP Applied Technologies, Inc.; Vycor PRO, or comparable product.
- B. Fasteners: Provide 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 Steel: Series 300 stainless steel.

- 2. Fasteners for Aluminum Sheet: Series 300 stainless steel.
- C. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber or sponge neoprene.
- D. Elastomeric Sealant: ASTM C920, elastomeric 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.

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. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Coordinate installation of products and accessories with installation of substrates, vapor retarders, roof insulation, roofing membrane, and flashing as required to ensure that each element of the Work performs properly and that combined elements are waterproof and weathertight.
- B. Install products and accessories to comply with recommendations in AAMA 1607 and with manufacturer's written installation instructions.
- C. Install products true to line and without distortion.
- D. Anchor products securely to supporting substrates.
- E. Where metal surfaces of products will contact other metal or corrosive substrates, such as preservative-treated wood, provide isolation barrier membrane at concealed metal surfaces or provide other approved permanent separation recommended in writing by manufacturer.
- F. Install gaskets and sealants per manufacturer's instructions for watertight and airtight installation.
- G. Install indicated fall protection devices.

3.3 CLEANING AND ADJUSTING

- A. Clean exposed product surfaces in accordance with manufacturer's written instructions. Touch up damaged metal coatings and finishes.

- B. Remove excess sealants, glazing materials, dirt, and other substances.
- C. Remove and replace glazing that has been broken, chipped, cracked, abraded, or damaged during construction period.
- D. Protect product surfaces from contact with contaminating substances resulting from construction operations.
- E. Daylight Dimmer Assemblies: Test and adjust dimmer assemblies in tubular daylighting devices for proper operation.

3.4 DEMONSTRATION

- A. Train Owner's maintenance personnel to adjust, operate, and maintain the following:
 - 1. Daylight dimmer assemblies for tubular daylighting devices.

END OF SECTION 08 62 00

SECTION 08 71 00 - DOOR HARDWARE**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section includes:
 - 1. Mechanical door hardware for the following:
 - a. Swinging doors.
 - 2. Cylinders for door hardware specified in other Sections.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
 - 1. Hinges.
 - 2. Mortise locks.
 - 3. Exit Devices.
 - 4. Lock cylinders.
 - 5. Construction cores.
 - 6. Keying system/keys.
 - 7. Surface closers.
 - 8. Door gasketing.
 - 9. Metal protective trim units.
- B. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule.
 - 1. Sample Size: Full-size units or minimum 2-by-4-inch Samples for sheet and 4-inch long Samples for other products.

- C. **Door Hardware Schedule:** Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. **Format:** Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
 2. **Content:** Include the following information:
 - a. Identification number, location, hand, fire rating, size, and material of each door and frame.
 - b. Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
 - c. Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
 - d. Description of electrified door hardware sequences of operation and interfaces with other building control systems.
 - e. Fastenings and other pertinent information.
 - f. Explanation of abbreviations, symbols, and codes contained in schedule.
 - g. Mounting locations for door hardware.
- D. **Keying Schedule:** Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.
- E. **Warranty:** Sample of special warranty specified in this Section.

1.5 INFORMATIONAL SUBMITTALS

- A. **Product Certificates:** For electrified door hardware, from the manufacturer.
1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

1.6 CLOSEOUT SUBMITTALS

- A. **Maintenance Data:** For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
- B. **Warranty:** Executed special warranty specified in this Section.

1.7 QUALITY ASSURANCE

- A. **Installer Qualifications:** Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
1. **Scheduling Responsibility:** Preparation of door hardware and keying schedules.

2. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently or has been certified by DHI as follows:
1. For door hardware, an Architectural Hardware Consultant (AHC)
- C. Source Limitations: Obtain each type of door hardware from a single manufacturer.
- D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.
- E. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.
- F. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- G. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines, ICC/ANSI A117.1 and building code in effect for Project.
1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf.
 2. Comply with the following maximum opening-force requirements:
 - a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
 - b. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
 4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- H. Preinstallation Conference: Conduct conference at Project site.
1. Inspect and discuss preparatory work performed by other trades.

2. Inspect and discuss electrical roughing-in for electrified door hardware.
3. Review sequence of operation for each type of electrified door hardware.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

1.9 COORDINATION

- A. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
- C. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation. This includes lock series, lever design and finish.

1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Structural failures including excessive deflection, cracking, or breakage.
 - b. Faulty operation of doors and door hardware.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
 2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
 - a. Hinges: Lifetime
 - b. Locksets: Lifetime
 - c. Manual Closers: Lifetime.

1.11 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.
 - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products or products equivalent in function and comparable in quality to named products.
 - 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
 - 3. Electric Locking Hardware: Exit hardware shall always remain fully operational manually regardless of the status of electric latch.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:
 - 1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
 - 2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.2 HINGES

- A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
 - 1. Manufacturers: Subject to compliance with requirements including warranty, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Best / Stanley
 - b. Hager
 - c. McKinney

2.3 MECHANICAL LOCKS AND LATCHES

- A. Lock Functions: As indicated in door hardware schedule.
- B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
 - 1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
- C. Lock Backset: 2-3/4 inches, unless otherwise indicated.
- D. Lock Trim:
 - 1. Levers:
 - a. Best #14N
- E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
- F. Mortise Locks: BHMA A156.13; Operational and Security Grade 1; stamped steel case with steel or brass parts; Series 1000 with solid one-piece stainless steel latchbolt
 - 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. Best

2.4 LOCK CYLINDERS

- A. Match District's existing Best Cormax system.

2.5 KEYING

- A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
 - 1. Master Key System: Change keys and a master key operate cylinders.
 - 2. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.
 - 3. Existing System:
 - a. Master key or grand master key locks to Owner's existing system.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."
2. Quantity: In addition to one extra key blank for each lock, provide the following:
 - a. Cylinder Change Keys: Three.
 - b. Master Keys: Five.
 - c. Grand Master Keys: Five.

2.6 SURFACE CLOSERS

- A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Provide units which are cast iron with a minimum 1-1/2" piston. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
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. Best QDC100 Series
 - b. LCN 4010/4110 Series

2.7 MECHANICAL STOPS AND HOLDERS

- A. Wall Stops: BHMA A156.16; plated satin chrome.
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. ABH.
 - b. Rockwood.
 - c. Trimco.

2.8 OVERHEAD STOPS AND HOLDERS

- A. Overhead Stops and Holders: BHMA A156.8.
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. ABH.
- b. Glynn Johnson.

2.9 DOOR GASKETING

- A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 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. National Guard Products.
 - b. Pemko.
 - c. Zero.

2.10 METAL PROTECTIVE TRIM UNITS

- A. Metal Protective Trim Units: BHMA A156.6; fabricated from 0.050-inch-thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
 - 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. ABH.
 - b. Rockwood.
 - c. Trimco.

2.11 FABRICATION

- A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.
 - 1. Manufacturer's identification is permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:
 - a. Wood or Machine Screws: For the following:
 - 1) Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors.
 - 2) Strike plates to frames.
 - 3) Closers to doors and frames.
 - b. Steel Through Bolts: For the following unless door blocking is provided:
 - 1) Surface hinges to doors.
 - 2) Closers to doors and frames.
 - 3) Surface-mounted exit devices.
3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.12 FINISHES

- A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. 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 the same piece are not acceptable. 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
 - 1. Custom Steel Doors and Frames: HMMA 831.
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent.
- D. Lock Cylinders: Install construction cores to secure building and areas during construction period.
 - 1. Replace construction cores with permanent cores as indicated in keying schedule.
- E. Stops: Provide wall stops for doors unless other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
- F. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

3.4 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
 - 1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
 - 2. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
- B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.5 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.7 HARDWARE SETS

Hardware Sets – In areas where mortise locks are visually present, provide lock series as indicated below. In areas where cylindrical locks are present, convert to 9K series. Lever design to match adjacent lever design. If existing hardware is bronze, convert finishes to 612 finish. Aluminum doors are to receive 662HD hinges. Aluminum doors to be wide stile or have mid rail for lock installation. Provide “QKS” hinge option at existing frames with new doors.

Set #1

Doors: 117A/1, 117B/1, 117C/1, 117E/1, 201/1, 201/2, 304A/2, 304B/1, 304C/1, 304D/1, 304E/1, 304F/1, 306/2, 320A/1, 320B/1, 320C/1, 320D/1, 320E/1, 320F/2,

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7R14N PATD	630AM	BE
1	Overhead Stop	N 4020 SERIES	630	AB
3	Silencer	1229A	GREY	TR

Set #2

Doors: 117H/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Exit Device	FL 2108 X 4908D	630AM	BE
1	Rim Cylinder	12E-72 PATD	626	BE
1	Door Closer	QDC113	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 C		NA

Set #3 - Hold Open

Doors: 117/1, 304/1, 304/2, 320/1, 320/2

6	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Removable Mullion	FLKR822	600	BE
2	Exit Device	FL 2110 X V4908D	630AM	BE
2	Rim Cylinder	12E-72 PATD	626	BE
2	Mag Hold Open	2110	630	AB
2	Door Closer	QDC111	689	BE
2	Kick Plate	K0050 8"	630	TR
2	Gasketing	2525 C		NA

Set #4

Doors: 117D/1, 117D/2, 117E/2, 120/1, 121/2, 320H/1, 406A/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	ST
1	Lockset	45H-7R14N PATD	630AM	BE
1	Wall Bumper	1270CVSV	626	TR
1	Gasketing	2525 C		NA

Set #5

Doors: 113/1, 121/1, 306/1, 600A/2

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7AB14N PATD	630AM	BE
1	Door Closer	QDC113	689	BE
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 C		NA

Set #6

Doors: 339B/1, 339B/2

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7AB14N PATD	630AM	BE
1	Overhead Stop	N 402O SERIES	630	AB
1	Gasketing	2525 C		NA

Set #7

Doors: 100/1, 103/1, 201/3, 205/1, 207/1, 338/1, 339A/1, 320A/2, 320F/1, 320H/2, 339/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Lockset	45H-7AB14N PATD	630AM	BE
1	Door Closer	QDC111 X PLATE	689	BE
1	Overhead Stop	N 4023	630	AB
1	Kick Plate	K0050 8"	630	TR
1	Gasketing	2525 C		NA

Set #8

Doors: 600A/1

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Exit Device	FL 2308 X M4908D	630AM	BE
1	Mortise Cylinder	1E-74 PATD	626	BE
1	Mag Hold Open	2110	630	AB
1	Door Closer	QDC111	689	BE
1	Gasketing	2525 C		NA

Set #9

Doors: 103/2, 207/2, 339A/3

3	Butt Hinge	CB1900R 4.5" x 4.5"	652	BE
1	Passage Set	45H-0N14M	630AM	BE
1	Overhead Stop	N 402O SERIES	630	AB
1	Gasketing	2525 C		NA

Set #10

Doors: 117/2, 117E/3, 339/2

1	Continuous Hinge	662HD	628	BE
1	Lockset	45H-7AB14N PATD	630AM	BE
1	Door Closer	QDC114	689	BE
1	Door Sweep	C627 A		NA
1	Threshold	896 S	628	NA

Set #11 (Per Fire Rated Glazed Opening Manufacturer's Requirements to maintain assembly rating)

Doors: 339A/2

4	Offset 3 Piece Pivot Hinge	Turband 4	Match DR/FR	DH
1	Lockset	8556	630AM	AC
1	Door Closer	TS93 (without hold open)	689	DM
1	Door Sweep	FH+RD/50dB		PMF

Set #12

Doors: B202/1, 400/1

1	Continuous Hinge	662HD	628	BE
1	Lockset	45H-7D14N PATD	630AM	BE
1	Door Closer	QDC114	689	BE
1	Door Sweep	C627 A		NA
1	Threshold	896 S	628	NA

Set #13

Doors: B201/1

2	Continuous Hinge	662HD	628	BE
2	Flush Bolt	555	US26D	RO
1	Dust Proof Strike	570	US26D	RO
1	Lockset	45H-7D14N PATD	630AM	BE
2	Door Closer	QDC114	689	BE
1	Gasketing	700 ES	628	NA
1	Astragal	158 SA	628	NA
2	Door Sweep	C627 A		NA
1	Threshold	896 S	628	NA

END OF SECTION 08 71 00

SECTION 08 80 00 - GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Glass products.
 - 2. Laminated glass.
 - 3. Fire-protection-rated glazing.
 - 4. Insulating glass.
 - 5. Insulated spandrel panels.

1.3 DEFINITIONS

- A. Fire-Protection-Rated Glazing: Glazing in rated doors and openings up to 45 minutes (with certain exceptions), limited in size, and not capable of blocking radiant heat.
- B. Glazing Manufacturers: Firms that produce primary glazing, fabricated glazing, or both, as defined in referenced glazing publications.
- C. Glass Thicknesses: Indicated by thickness designations in millimeters in accordance with ASTM C1036.
- D. IBC: International Building Code.
- E. Interspace: Space between lites of an insulating-glass unit.
- F. SHGC: Solar Heat Gain Coefficient.

1.4 COORDINATION

- A. Coordinate glazing channel dimensions to provide necessary bite on glazing, 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. Coordinate framing types to provide proper framing fire rating.

1.5 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.

2. Review, discuss, and coordinate the interrelationship of glazing with other components, including framing.
3. Review temporary protection requirements for glazing during and after installation.

1.6 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section and by Division 08 Sections "Hollow Metal Doors and Frames," "Flush Wood Doors," and "Aluminum-Framed Entrances and Storefronts," concurrently.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 1. Laminated glass.
 2. Insulating glass.
 3. Insulated spandrel panels.
- B. As-Specified Data: If the product to be incorporated in the Work is as specified by manufacturer name and product designation in this Specification Section, submit the "**As-Specified Verification Form**" (attached to Division 01 Section "Submittal Procedures") for each item listed below; otherwise submit full Product Data for the following:
 1. Glass products.
 2. Fire-protection-rated glazing.
- C. Sustainable Design Submittals:
 1. Product Data: For sealants, indicating VOC content.
- D. Samples: For each type of the following products; 12 inches square.
 1. Patterned glass.
 2. Laminated glass.
 3. Fire-protection-rated glazing.
 4. Insulating glass.
 5. Insulated spandrel panels.
- E. Glazing Schedule: List glazing types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- F. Delegated Design Submittal: For glazing indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by qualified professional engineer responsible for their preparation.
- G. Sample Warranties: For special warranties.

1.8 INFORMATIONAL SUBMITTALS

- A. Forced-Entry-Resistance-Rated Certification: For each type of forced-entry-resistance-rated security glazing for tests performed by a qualified testing agency indicating compliance with performance requirements.
- B. Bullet-Resistance-Rated Performance Certification: For each type of bullet-resistance-rated security glazing for tests performed by a qualified testing agency indicating compliance with performance requirements.
- C. Preconstruction adhesion and compatibility test report.

1.9 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For glazing to include in maintenance manuals.
- B. Warranties: Executed special warranties.

1.10 PRECONSTRUCTION TESTING

- A. Preconstruction Adhesion and Compatibility Testing: Test each glazing product, tape sealant, gasket, glazing accessory, and 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 glazing, 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.
 - 5. For materials failing tests, submit sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.

1.11 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. Maintain protective coverings on glazing to avoid exposures to abrasive substances, excessive heat, and other sources of possible deterioration.

1.12 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.

1.13 WARRANTY

- A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer or manufacturer/fabricator, as applicable, 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 Laminated Glass: Manufacturer or manufacturer/fabricator, as applicable, 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. "Laminated Glass", as used in this paragraph, includes clear laminated glass, fire-protection-rated laminated ceramic glass, and fire-protection-rated laminated glass with intumescent interlayer.
 - 1. Warranty Period: 5 years from date of Substantial Completion.
- C. Manufacturer's Special Warranty on Tempered Glazing Units with Clear Intumescent Interlayer: Manufacturer or manufacturer/fabricator, as applicable, agrees to replace units that deteriorate within specified warranty period. Deterioration of tempered glazing units with clear intumescent interlayer is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning glass contrary to manufacturer's written instructions. Evidence of failure is air bubbles within units, or obstruction of vision by contamination or deterioration of intumescent interlayer.
 - 1. Warranty Period: 5 years from date of Substantial Completion.
- D. Manufacturer's Special Warranty for Insulating Glass: Manufacturer or manufacturer/fabricator, as applicable, 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. Where laminated glass is used as a component in an insulating-glass unit, deterioration of the laminated glass itself is covered by the paragraph[s] "Manufacturer's Special Warranty for Laminated Glass" above, and deterioration of the insulating glass due to failure of hermetic seal is covered by this paragraph "Manufacturer's Special Warranty for Insulating Glass."
 2. Warranty Period: 10 years from date of Substantial Completion.
- E. Manufacturer's Special Warranty for Aluminum-Faced Insulated Spandrel Panels: Manufacturer agrees to replace insulated spandrel panels that deteriorate within specified warranty period.
1. Deterioration includes, but is not limited to, the following:
 - a. Delamination of components or other failures of bond.
 - b. Warping of components.
 2. Warranty Period: 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations for Glazing: For each glazing type, obtain from single manufacturer.
- B. Source Limitations for Glazing Accessories: For each product and installation method, obtain 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.
 1. Installed security glazing shall withstand security-related loads and forces without damage to the glazing beyond that allowed by referenced standards.
- B. 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. Probability of Breakage for Sloped Glazing: For glass sloped more than 15 degrees from vertical, design glass for a probability of breakage not greater than 0.001.
 2. Maximum Lateral Deflection: For glazing 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. Maintain engagement of the glazing edge with an appropriate margin of safety under all conditions.

3. Thermal Loads: Design glazing to resist thermal stress breakage induced by differential temperature conditions and limited air circulation within individual glass lites and insulated glazing units.
- C. Safety Glazing: Where safety glazing is indicated, provide glazing that complies with 16 CFR 1201, Category II.
- D. Thermal and Optical Performance Properties: Provide glazing 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 laminated-glass lites, properties are based on products of construction indicated.
 3. For insulating-glass units, properties are based on units of thickness indicated for overall unit and for each lite.
 4. 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.
 5. 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.

2.3 GLAZING PRODUCTS, GENERAL

- A. Glazing Publications: Comply with published recommendations of glazing 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: "Laminated Glazing Reference Manual," and "Glazing Manual."
 2. FGIA Publication for Insulating Glass: IGMA 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 glazing, thickness, and safety glazing standard with which glazing complies.
- C. 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.
- D. 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.

- E. Thickness: Where glazing thickness is indicated, it is a minimum. Provide glazing that complies with performance requirements and is not less than thickness indicated.
 - 1. Minimum Glass Thickness for Exterior Lites: 6 mm.
 - 2. Thickness of Tinted Glass: Provide same thickness for each tint color indicated throughout Project.
- F. Strength: Where heat-strengthened float glass is indicated, provide heat-strengthened 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. Clear Annealed Float Glass: ASTM C1036, Type I, Class 1 (clear), Quality-Q3.
- B. Low-Iron Annealed Float Glass: ASTM C1036, Type I, Class I (clear), Quality-Q3; and with visible light transmission of not less than 91 percent.
- 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 horizontally parallel to bottom edge of glass as installed unless otherwise indicated.
 - 2. Clear Glass:
 - a. Type FC: Fully tempered clear float glass.
 - 1) Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a) AGC Glass Company North America, Inc.; Clear Float.
 - b) Guardian Glass, LLC; Clear Float.
 - c) Vitro Architectural Glass; Clear.
 - 2) Minimum Thickness: 6 mm.
 - 3) Safety glazing required.
 - b. Type FCE: Fully tempered clear float glass with low-e coating, ASTM C1376.
 - 1) Products: Subject to compliance with requirements, available products that may be incorporated in the Work, include, but are not limited to:
 - a) AGC Glass Company North America, Inc.; Energy Select 28.
 - b) Guardian Glass, LLC; SunGuard SNX 62/27 on Clear Float.
 - c) Vitro Architectural Glass; Solarban 70.
 - 2) Minimum Thickness: 6 mm.
 - 3) Safety glazing required.

2.5 LAMINATED GLASS

- A. 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 to comply with interlayer manufacturer's written instructions.
 2. Interlayer Thickness: Provide thickness not less than 0.060 inch and as needed to comply with requirements.
 3. Appearance: Provide laminated glass without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.
 4. Type HCL: Clear laminated glass (two plies of clear heat-strengthened float glass laminated).
 - a. Minimum Thickness of Each Ply: 4 mm.
 - b. Interlayer Color: Clear
 - c. Safety glazing required.
 5. Type HCL-2: Clear laminated glass (two plies of clear heat-strengthened float glass laminated).
 - a. Minimum Thickness of Each Ply: 4 mm.
 - b. Interlayer
 - 1) Color: as selected from manufacturer's full range
 - a) Separate colors may be selected for each building.
 - 2) Effect: Sandblast
 - 3) Pattern: As shown on drawings consisting of a combination of Clear and sandblast effects
 - c. Safety glazing required.

2.6 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 according to NFPA 257 or UL 9, including hose-stream test, and shall comply with NFPA 80.
- B. Appearance: Provide fire-protection-rated glazing without haze and with visual clarity and transparency indistinguishable from clear fully tempered float glass.

- C. Fire-Protection-Rated Tempered Glass: Fire-protection-rated tempered glass; complying with 16 CFR 1201, Category II.
1. Type FP: Fire-protection-rated tempered glass, exempted from the hose-stream test.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safti First Fire Rated Glazing Solutions; SuperLite I.
 - 2) Technical Glass Products; Fireglass 20.
 - 3) Vetrotech Saint-Gobain; Pyroswiss 20.
 - b. Rating: 20 minutes.
 - c. Thickness: 6 mm.
 - d. Safety glazing required.
- D. Fire-Protection-Rated Laminated Ceramic Glazing: Laminated glass made from two plies of clear, ceramic glass; complying with 16 CFR 1201, Category II.
1. Type FPC: Fire-protection-rated laminated ceramic glazing.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safti First Fire Rated Glazing Solutions; Pyran Platinum L.
 - 2) Technical Glass Products; FireLite Plus.
 - b. Rating: 20 minutes and 45 minutes.
 - c. Thickness: 8-9 mm.
 - d. Safety glazing required.
- E. Fire-Protection-Rated Laminated Glass with Intumescent Interlayer: Laminated glass made from multiple plies of uncoated, ultraclear (low-iron) float glass; with intumescent interlayers; complying with 16 CFR 1201, Category II.
1. Type **FPI**: Fire-protection-rated laminated glass with intumescent interlayer.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safti First Fire Rated Glazing Solutions; SuperLite II-XLM 45.
 - 2) Technical Glass Products; Pilkington Pyrostop.
 - 3) Vetrotech Saint-Gobain; Contraflam 45.
 - b. Rating: 45 minutes.

- c. Thickness: 16-20 mm.
- d. Safety glazing required.

2.7 FIRE-RESISTANCE-RATED GLAZING

- A. Fire-Resistance-Rated Glazing: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-resistance ratings indicated, based on testing according to ASTM E 119 or UL 263.
- B. Fire-Resistance-Rated Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, ultraclear (low-iron) float glass; with intumescent interlayers; complying with 16 CFR 1201, Category II.
 - 1. Type **FRI**: Fire-resistance-rated laminated glass with intumescent interlayer and butt joints.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safti First Fire Rated Glazing Solutions; SuperLite II-XLB60.
 - 2) Technical Glass Products; Pilkington Pyrostop.
 - 3) Vetrotech Saint-Gobain; Contraflam Structure 60.
 - b. Rating: 60 minutes.
 - c. Thickness: As required for rating.
 - d. Safety glazing required.
 - e. Butt glazed joint per manufacturer's requirements to meet rated assembly
 - 2. Type **FRI-2**: Fire-resistance-rated laminated glass with intumescent interlayer and butt joints.
 - a. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - 1) Safti First Fire Rated Glazing Solutions; SuperLite II-XLB60.
 - 2) Technical Glass Products; Pilkington Pyrostop.
 - 3) Vetrotech Saint-Gobain; Contraflam Structure 60.
 - b. Rating: 60 minutes.
 - c. Thickness: As required for rating.

- d. Interlayer
 - 1) Pattern: Surface #2 Obscure pattern
 - a) Basis of Design: Contraflam 60 Structure – SX80089 Satin Etch
- e. Safety glazing required.
- f. Butt glazed joint per manufacturer's requirements to meet rated assembly

2.8 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. Sealing System: Dual seal, with manufacturer's standard primary and secondary sealants.
 - 2. Perimeter Spacer: Manufacturer's standard Warm Edge Technology (WET) spacer material and construction.
 - 3. Desiccant: Molecular sieve or silica gel, or a blend of both.
 - 4. Interspace Content: Argon (90 percent)/air (10 percent) mix.
- B. Insulating Vision Glass:
 - 1. Type FCE/FC: Low-e-coated, clear insulating glass.
 - a. Overall Unit Thickness: 1 inch.
 - b. Outdoor Lite: Fully tempered clear float glass with low-e coating, Type FCE.
 - c. Low-E Coating: Sputtered on second surface.
 - d. Interspace Content: Argon.
 - e. Indoor Lite: Fully tempered clear float glass, Type FC.
 - f. Glass Unit Performance Values:
 - 1) Winter Nighttime U-Factor: 0.24 Btu/sq. ft. x h x deg F maximum.
 - 2) SHGC: 0.28 maximum.
 - 3) Visible Light Transmittance: 62 percent minimum.
- C. Insulating Laminated Glass:
 - 1. Type FCE/HCL: Low-e-coated, clear insulating laminated glass.
 - a. Overall Unit Thickness: 1 inch.
 - b. Outdoor Lite: Fully tempered clear float glass with low-e coating, Type FCE.

- c. Low-E Coating: Sputtered on second surface.
- d. Interspace Content: Argon.
- e. Indoor Lite: Clear laminated glass with two plies of heat-strengthened float glass, HCL.
- f. Glass Unit Performance Values:
 - 1) Winter Nighttime U-Factor: 0.24 Btu/sq. ft. x h x deg F maximum.
 - 2) SHGC: 0.27 maximum.
 - 3) Visible Light Transmittance: 61 percent minimum.

2.9 INSULATED SPANDREL PANELS

- A. Insulated Spandrel Panels: Laminated, rabbeted, aluminum-faced flat panels with no deviations in plane exceeding 0.8 percent of panel dimension in width or length.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Mapes Industries, Inc.; Mapes-R+ 8-ply, or comparable product, including, but not limited to, products by:
 - a. Nudo Products.
 - 2. Overall Panel Thickness: 2-inch (including 1-inch glazing leg).
 - 3. Exterior Skin: Aluminum.
 - a. Thickness: 0.032-inch.
 - b. Finish: Clear anodic finish or High-performance organic finish, to be verified in the field.
 - c. Texture: Smooth, to be verified in the field.
 - d. Backing Sheet: 0.157-inch-thick, cement board.
 - 4. Thermal Insulation Core: Manufacturer's standard rigid, closed-cell, polyisocyanurate board.
 - 5. Interior Skin: Aluminum.
 - a. Thickness: 0.032-inch.
 - b. Finish: Clear anodic finish or High-performance organic finish, to be verified in the field
 - c. Texture: Smooth.
 - d. Backing Sheet: 1/2-inch-thick, gypsum board with proprietary fire-resistance-rated core.
 - 6. Overall U-factor: 0.24 Btu/sq. ft. x h x deg F maximum.

7. 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.

2.10 GLAZING SEALANTS

A. General:

1. Compatibility: Compatible with one another and with other materials they contact, including glazing 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 glazing manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
3. Sealant shall have a VOC content of 250 g/L or less.
4. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range of industry colors.

2.11 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 glazing manufacturers for application indicated; and complying with ASTM C1281 and AAMA 800 for products indicated below:
 1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
 2. 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.

2.12 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:
 - 1. Elastomeric material with Shore A durometer hardness of 85, plus or minus 5.
 - 2. Type recommended in writing by sealant or glazing manufacturer.
- D. Spacers:
 - 1. Elastomeric blocks or continuous extrusions of hardness required by glazing manufacturer to maintain glazing lites in place for installation indicated.
 - 2. Type recommended in writing by sealant or glazing manufacturer.
- E. Edge Blocks:
 - 1. Elastomeric material with Shore A durometer hardness per manufacturer's written instructions.
 - 2. Type recommended in writing by sealant or glazing 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.

2.13 GLAZING ACCESSORIES FOR FIRE-RATED GLAZING PRODUCTS

- 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-rated glazing products with which products are used for applications and fire 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. Colors of Exposed Glazing Sealants: As selected by Architect from manufacturer's full range.
- C. Perimeter Insulation for Fire-Rated Glazing: Product that is approved by testing agency that listed and labeled fire-rated glazing product with which it is used for application and fire rating indicated.

2.14 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 framing members and glazing components.
 - a. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- B. Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- C. Grind smooth and polish exposed glass edges and corners.

2.15 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.
- B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
 - 1. Color: As selected by Architect from full manufacturer's range.
 - a. Separate colors may be selected for each building.
- C. 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.
 - a. Separate colors may be selected for each building.

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. Minimum required bite.
 - 5. Effective sealing between joints of framing members.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean glazing channels and other framing members receiving glazing 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.
- C. For fire-rated glazing units, 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.
- D. For laminated-glass security glazing, examine glazing units to locate attack or threat side and protected side. Label or mark units as needed so that attack or threat side and protected side are readily identifiable. Do not leave visible marks in the completed Work.

3.3 GLAZING, GENERAL

- A. Comply with combined written instructions of manufacturers of glazing, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- B. Protect glazing edges from damage during handling and installation. Remove damaged glazing from Project site and legally dispose of off Project site. Damaged glazing includes glazing with edge damage or other imperfections that, when installed, could weaken glazing, 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 glazing manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- E. Do not exceed edge pressures stipulated by glazing manufacturers for installing glazing lites.
- F. Provide spacers for glazing lites where length plus width is larger than 50 inches.
 - 1. Locate spacers directly opposite each other on both inside and outside faces of glazing. 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 glazing 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 glazing lites from moving sideways in glazing channel, as recommended in writing by glazing manufacturer and in accordance with requirements in referenced glazing publications.
- H. Set glazing lites in each series with uniform pattern, draw, bow, and similar characteristics.
- I. Set glazing lites with proper orientation so that coatings face exterior or interior as specified.
- J. For fire-resistant glazing, set glass lites with proper orientation so that surfaces face fire side or protected side as specified.
- K. For security glazing, set glazing lites with proper orientation so that surfaces face attack or threat side or protected side as specified.
- L. 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.
- M. 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 glazing, 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. Apply heel bead of elastomeric sealant.
- G. Center glazing 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.
- H. 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 glazing 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 glazing 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 glazing 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 glazing lites and glazing stops to maintain glazing face clearances and to prevent sealant from extruding into glazing 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 glazing and channel surfaces.
- C. Tool exposed surfaces of sealants to provide a substantial wash away from glazing.

3.7 CLEANING AND PROTECTION

- A. Immediately after installation, remove nonpermanent labels and clean surfaces.
- B. Protect glazing from contact with contaminating substances resulting from construction operations. Examine glazing 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 glazing, remove substances immediately as recommended in writing by glazing manufacturer. Remove and replace glazing that cannot be cleaned without damage to coatings.
- C. Remove and replace glazing that is damaged during construction period.

- D. Wash glazing on both exposed surfaces not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glazing as recommended in writing by glazing manufacturer.

END OF SECTION 08 80 00

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 Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Gypsum board shaft wall assemblies.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each component of gypsum board shaft wall assembly.
 - 1. Studs and tracks.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Gypsum shaftliner board.

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 support them on risers on a flat platform to prevent sagging.

1.6 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.

2.2 GYPSUM BOARD SHAFT WALL ASSEMBLIES

- A. Fire-Resistance Rating: As indicated on Drawings.
- B. 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, available products that may be incorporated into the Work include, but are not limited to, the following:
 - 1) CertainTeed Gypsum, Saint-Gobain; M2Tech Shaftliner Type X Gypsum Board.
 - 2) National Gypsum Company; Gold Bond Brand 1" Fire-Shield Shaftliner XP.
 - 3) USG Corporation; Sheetrock Brand Mold Tough Gypsum Liner Panels.
- C. 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, G40, hot-dip galvanized unless otherwise indicated.
- D. 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.

- E. 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: 0.033 inch.

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 Division 09 Section "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 0.0538-inch minimum thickness of base metal (uncoated).
- F. Acoustical Sealant: Division 07 Section "Joint Sealants."
- G. Gypsum Board Cants:
 - 1. Gypsum Board Panels: As specified in Division 09 Section "Gypsum Board," Type X, 5/8-inch panels.

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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 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. 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.
 - 2. Notify Architect prior to applying panels to allow observation of framing installation.
- C. 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, pipes and similar items.
- D. Isolate perimeter of gypsum panels from building structure to prevent cracking of panels while maintaining continuity of fire-rated construction.
- E. 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.
- F. 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.

3.3 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 blotchy surface contamination and discoloration.

END OF SECTION 09 21 16.23

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 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.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Steel studs and tracks.
 - 2. Slip-type head joints.
 - 3. Flat strap and backing plate.
 - 4. Cold-rolled channel bridging.
 - 5. Tie wire.
 - 6. Hanger attachments to concrete.
 - 7. Wire hangers.
 - 8. Carrying channels (main runners).
 - 9. Isolation strip at exterior walls.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Grid suspension system for gypsum board ceilings.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of code-compliance certification for studs and tracks.

1.6 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 or the Steel Framing Industry 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.

2.2 FRAMING SYSTEMS

- A. 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, G40, hot-dip galvanized unless otherwise indicated.
- B. Studs and Tracks: ASTM C645.
 - 1. Steel Studs and Tracks:
 - a. Minimum Base-Steel Thickness: 0.0329 inch.
 - b. Depth: As indicated on Drawings.
 - c. Minimum Track Leg Length: 1-1/4 inches.
- C. Slip-Type Head Joints: Where indicated, provide the following:
 - 1. Deflection Track: Steel sheet top track manufactured to prevent cracking of finishes applied to interior partition framing resulting from deflection of structure above; with minimum track leg length of 2-1/2 inches; in thickness not less than indicated for studs and in width to accommodate depth of studs.
- D. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.
 - 1. Minimum Base-Steel Thickness: 0.0538 inch.

- E. Cold-Rolled Channel Bridging: Steel, 0.0538-inch minimum base-steel thickness, with minimum 1/2-inch-wide flanges.

- 1. Depth: 1-1/2 inches.
 - 2. Clip Angle: Not less than 1-1/2 by 1-1/2 inches, 0.068-inch-thick, galvanized steel.

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: 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-steel thickness of 0.0538 inch and minimum 1/2-inch-wide flanges.

- 1. Depth: As indicated on Drawings.

- E. 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, available products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Armstrong World Industries, Inc.; Drywall Grid System.
 - b. CertainTeed Ceilings; 1-1/2" Drywall System.
 - 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 the following:
 - 1. 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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.
 - 2. Multilayer Application: 16 inches o.c. unless otherwise indicated.
 - 3. Tile Backing Panels: 16 inches o.c. unless otherwise indicated.
- 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. Continue framing around ducts that penetrate partitions above ceiling.
 - 1. Slip-Type Head Joints: Where framing extends to overhead structure, 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 for opening widths less than 4 feet; install two tracks and stud head member for opening widths 4 feet and wider.
 - a. Install two studs at each jamb unless otherwise indicated.
 - 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.
 5. Sound-Rated Partitions: Install framing to comply with sound-rated assembly indicated.
- E. Direct Furring:
1. Screw to wood framing.
 2. Attach to concrete or masonry with stub nails, screws designed for masonry attachment, or powder-driven fasteners spaced 24 inches o.c.
- F. 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.
- 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. Seismic Bracing: Sway-brace suspension systems with hangers used for support.
- F. 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.
- G. 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.

3.6 PRE-ENCLOSURE REVIEW

- A. Notify Architect prior to installing enclosing construction to allow observation of non-structural metal framing installation, including supplementary framing and blocking.

END OF SECTION 09 22 16

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior gypsum board.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Interior trim.
 - 2. Aluminum trim.
 - 3. Joint treatment materials.
 - 4. Sound-attenuation blankets.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:
 - 1. Gypsum board, Type X.
 - 2. Mold-resistant gypsum board.
 - 3. Acoustically enhanced gypsum board.

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 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: 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. 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 Wallboard: ASTM C1396/C1396M.
 - 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. CertainTeed Gypsum, Saint-Gobain; Regular Gypsum Board.
 - b. National Gypsum Company; Gold Bond Brand Gypsum Board.
 - c. USG Corporation; Sheetrock Brand Gypsum Panels.
 - 2. Thickness: 1/2 inch.
 - 3. Long Edges: Tapered.

B. Gypsum Board, Type X: ASTM C1396/C1396M.

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. CertainTeed Gypsum, Saint-Gobain; Type X Gypsum Board.
 - b. National Gypsum Company; Gold Bond Brand Fire-Shield Gypsum Board.
 - c. USG Corporation; Sheetrock Brand Firecode X Panels.
2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

C. Mold-Resistant Gypsum Board: ASTM C1396/C1396M. With moisture- and mold-resistant core and paper surfaces.

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. CertainTeed Gypsum, Saint-Gobain; M2Tech Moisture and Mold Resistant Gypsum Board Type X.
 - b. National Gypsum Company; Gold Bond Brand XP Fire-Shield Gypsum Board.
 - c. USG Corporation; Sheetrock Brand Mold Tough Panels Firecode X.
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 SPECIALTY GYPSUM BOARD

A. Acoustically Enhanced Gypsum Board: ASTM C1396/C1396M. Multilayer products constructed of two layers of gypsum boards sandwiching a viscoelastic sound-absorbing polymer core.

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. CertainTeed Gypsum, Saint-Gobain; SilentFX QuickCut with M2Tech Moisture and Mold Resistant Type X.
 - b. National Gypsum Company; Gold Bond Brand SoundBreak XP 5/8".
 - c. PABCO Gypsum; QuietRock ES Mold Resistant.
2. Core: 5/8 inch, Type X.
3. Long Edges: Tapered.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
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. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.

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. Fry Reglet Corporation.
 - b. Gordon, Inc.
 - c. Pittcon Industries.
2. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B221, Alloy 6063-T5.
3. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C475/C475M.

B. Joint Tape:

1. Interior Gypsum 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 drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.7 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

- B. Steel Drill Screws: ASTM C1002 unless otherwise indicated.
 - 1. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.
- C. 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.
- D. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants."
- E. Thermal Insulation: As specified in Division 07 Section "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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PRE-ENCLOSURE REVIEW

- A. Notify Architect prior to applying panels to allow observation of framing installation, including supplementary framing and blocking.

3.3 APPLYING AND FINISHING 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. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members or provide control joints to counteract wood shrinkage.
- J. Stud Partition 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.
- K. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.4 APPLYING INTERIOR GYPSUM BOARD

- A. Install interior gypsum board in the following locations:
 - 1. Type X: All surfaces unless otherwise indicated.
 - 2. Mold-Resistant Type: As indicated on Drawings.
 - 3. Acoustically Enhanced 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 vertically (parallel 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 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.
2. Fastening Methods: Fasten base layers and face layers separately to supports with screws.

3.5 INSTALLING 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.

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.
 - 2. Level 4: At panel surfaces that will be exposed to view unless otherwise indicated.

3.7 PROTECTION

- A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Restore 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 51 13 - ACOUSTICAL PANEL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes acoustical panels and exposed suspension systems for interior ceilings.

1.3 DEFINITIONS

- A. CAC: Ceiling Attenuation Class.
- B. LR: Light Reflectance.
- C. NRC: Noise Reduction Coefficient.

1.4 PREINSTALLATION MEETINGS

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

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Attachment devices.
 - 2. Wire hangers, braces and ties.
 - 3. Hanger rods.
 - 4. Flat hangers.
 - 5. Angle hangers.
 - 6. Roll-formed, sheet-metal edge moldings and trim.

- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below; otherwise submit full Product Data for the following:

1. Acoustical panels for ceiling type **A1**
2. Acoustical panels for ceiling type **A2**
3. Acoustical panels for ceiling type **A3**
4. Acoustical panels for ceiling type **A4**
5. Metal suspension system for ceiling types.
6. Extruded-aluminum or roll-formed, steel sheet metal edge moldings and trim.

- C. Samples for Verification: If proposing products other than those specifically named in Part 2 of this Section, for each component indicated and for each exposed finish required, prepared on Samples of sizes indicated below:

1. Acoustical Panels: 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.

1.7 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Ceiling suspension-system members.
2. Structural members to which suspension systems will be attached.
3. Method of attaching hangers to building structure.
4. Items penetrating finished ceiling and ceiling-mounted items including the following:
 - a. Lighting fixtures.
 - b. Diffusers.
 - c. Grilles.
 - d. Speakers.
 - e. Detectors.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For finishes to include in maintenance manuals.

1.9 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 Units: Full-size panels equal to 2 percent of quantity installed of each acoustical panel type.
 - 2. Suspension-System Components: Quantity of each exposed component equal to 2 percent of quantity installed of each metal suspension system type.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver acoustical panels, suspension-system components, and accessories to Project site 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.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Do not install acoustical panel ceilings until spaces are enclosed and weathertight, 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 MANUFACTURERS

- A. Source Limitations: Match each type of acoustical ceiling panel with a supporting suspension system of the same manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: Class A according to ASTM E1264.
 - 2. Smoke-Developed Index: 50 or less.

2.3 ACOUSTICAL PANELS, GENERAL

- A. Acoustical Panel Standard: Provide manufacturer's standard panels according to ASTM E1264 and designated by type, form, pattern, acoustical rating, and light reflectance unless otherwise indicated.
- B. Color: White, unless otherwise indicated.
- C. Antimicrobial Treatment: Manufacturer's standard broad spectrum, 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 D3273, ASTM D3274, or ASTM G21 and evaluated according to ASTM D3274 or ASTM G21.

2.4 STANDARD ACOUSTICAL PANELS FOR WIDE-FACE SUSPENSION SYSTEMS

A. Acoustical Panels for Ceiling Type **A1**:

- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - a. Armstrong World Industries, Inc.; Tundra 301.
 - b. CertainTeed Ceilings; School Board FF5B-157.
 - c. USG Corporation; Touchstone Panels 5893.
- 2. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
- 3. Pattern: As indicated by manufacturer's designation.
- 4. Modular Size: 24 by 24 inches.
- 5. Thickness: 5/8 inch.
- 6. Edge Detail: Square.
- 7. NRC: Not less than 0.50.
- 8. CAC: Not less than 30.
- 9. LR: Not less than 0.80.
- 10. Recycled Content: Not less than 30 percent.

B. Acoustical Panels for Ceiling Type **A2**:

- 1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - a. Armstrong World Industries, Inc.; School Zone Fine Fissured 1713.
 - b. CertainTeed Ceilings; Fine Fissured High NRC HHF-457 HNRC.
 - c. USG Corporation; Radar High-NRC Panels 22111.

2. Type and Form: Type III, mineral base with painted finish; Form 2, water felted.
3. Pattern: As indicated by manufacturer's designation.
4. Modular Size: 24 by 24 inches.
5. Thickness: 3/4 inch.
6. Edge Detail: Square.
7. NRC: Not less than 0.70.
8. CAC: Not less than 35.
9. LR: Not less than 0.80.
10. Recycled Content: Not less than 40 percent.

2.5 SPECIALTY ACOUSTICAL PANELS FOR WIDE-FACE SUSPENSION SYSTEMS

A. Acoustical Panels for Ceiling Type **A3**:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - a. Armstrong World Industries, Inc.; Kitchen Zone 673.
 - b. USG Corporation; Kitchen Lay-In Panels 3210.
2. Type and Form: Type IX, mineral-base panels with scrubbable pigmented or clear finish; Form 2, water felted.
3. Pattern: As indicated by manufacturer's designation.
4. Modular Size: 24 by 24 inches.
5. Thickness: 5/8 inch.
6. Edge Detail: Square.
7. CAC: Not less than 30.
8. LR: Not less than 0.85.
9. Recycled Content: Not less than 20 percent.

2.6 BLADE PANELS FOR WIDE-FACE SUSPENSION SYSTEMS

A. Blade Panels for Ceiling Type A4:

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to:
 - a. Armstrong World Industries, Inc.; Metalworks IMMIX Blades 6343D61.
2. Type and Form: Type XX
3. Pattern: As indicated by manufacturer's designation.
4. Color: Select from manufacturer's full range of colors.
 - a. Separate colors may be selected for each building.
5. Modular Size: 24 by 96 inches.
 - a. Number of Blades: 3 Blades =.
6. Width: 1 inch.
7. Height: 7 inches.
8. Edge Detail: Square Panelized.
 - a. Blade End Caps.
9. NRC: Not less than 0.50.
10. LR: Not less than 0.75.

2.7 METAL SUSPENSION SYSTEMS, GENERAL

- ### A. Metal Suspension-System Standard: Provide manufacturer's standard, direct-hung, metal suspension system and accessories according to ASTM C635/C635M and designated by type, structural classification, and finish indicated.
1. High-Humidity Finish: Where indicated, provide coating tested and classified for "severe environment performance" according to ASTM C635/C635M.

2.8 WIDE-FACE METAL SUSPENSION SYSTEMS

A. Wide-Face Suspension System for Ceiling Type:

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. Armstrong World Industries, Inc.; Prelude XL 15/16-inch Exposed Tee System.
 - b. CertainTeed Ceilings; 15/16-inch EZ Stab Classic System.
 - c. USG Corporation; Donn Brand DX Acoustical Suspension System.
2. Wide-Face, Capped, Double-Web, Steel Suspension System: Main and cross runners roll formed from cold-rolled steel sheet; hot-dip galvanized, G30 coating designation; with prefinished 15/16-inch-wide metal caps on flanges.
 3. Structural Classification: Heavy-duty system.
 4. End Condition of Cross Runners: Override (stepped) type.
 5. Face Design: Flat, flush.
 6. Cap Material: Cold-rolled steel.
 7. Cap Finish: Painted white, unless noted otherwise.

2.9 ACCESSORIES

- A. Attachment Devices: Size for five times the design load indicated in ASTM C635/C635M, Table 1, "Direct Hung," unless otherwise indicated. "Anchors in Concrete" Subparagraph below does not apply to power-actuated fasteners. Retain if anchorage to concrete is required and if power-actuated fasteners are unacceptable. Verify safety factor with Project's structural engineer. Revise testing methods below if required by authorities having jurisdiction.
 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 E488/E488M or ASTM E1512 as applicable, conducted by a qualified testing and inspecting agency.
 - a. Type: Postinstalled bonded anchors.
 - b. Corrosion Protection: Carbon-steel components zinc plated according to ASTM B633, Class SC 1 (mild) service condition.
- B. Wire Hangers, Braces, Clips and Ties: Provide wires as follows:
 1. Zinc-Coated, Carbon-Steel Wire: ASTM A641/A641M, Class 1 zinc coating, soft temper.
 2. Stainless-Steel Wire: ASTM A580/A580M, Type 304, nonmagnetic. Where noted on drawings.
 3. Beam End Clip for ceiling type A4 attachment
 4. Size: Wire diameter sufficient for its stress at three times hanger design load (ASTM C635/C635M, Table 1, "Direct Hung") will be less than yield stress of wire, but not less than 0.106-inch- diameter wire.
- C. Hanger Rods: Mild steel, zinc coated or protected with rust-inhibitive paint.

- D. Flat Hangers: Mild steel, zinc coated or protected with rust-inhibitive paint.
- E. Angle Hangers: Angles with legs not less than 7/8 inch wide; formed with 0.04-inch-thick, galvanized-steel sheet complying with ASTM A653/A653M, G90 coating designation; with bolted connections and 5/16-inch-diameter bolts.

2.10 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; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension-system runners.
 - 1. Edge moldings shall fit acoustical panel edge details and suspension systems indicated and 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.
- B. Extruded-Aluminum or Roll-Formed Steel Sheet-Metal Edge Moldings and Trim: Where indicated for ceiling clouds or fasciae, provide manufacturer's extruded-aluminum or roll-formed steel sheet-metal edge moldings and trim of profile indicated or referenced by manufacturer's designations, including splice plates, corner pieces, and attachment and other clips.
 - 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. Armstrong World Industries, Inc.; Axiom Classic Trim.
 - b. USG Corporation; Compasso Suspension Trim.
 - 2. Baked-Enamel or Powder-Coat Finish: Minimum dry film thickness of 1.5 mils. Comply with ASTM C635/C635M and coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

2.11 ACOUSTICAL SEALANT

- A. Acoustical Sealant: As specified in Division 07 Section " Joint Sealants."

PART 3 - EXECUTION

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.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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 unless otherwise indicated, and comply with layout shown on reflected ceiling plans.
- B. Lay out openings for penetrations centered on the penetrating items.

3.3 INSTALLATION

- A. Install acoustical panel ceilings according to ASTM C636/C636M and manufacturer's written instructions.
- 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 to structure 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 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 o.c. 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.
- 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 o.c. and not more than 3 inches from ends. 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 precise fit.
1. For square-edged panels, install panels with edges fully hidden from view by flanges of suspension-system runners and moldings.
 2. For reveal-edged panels on suspension-system runners, install panels with bottom of reveal in firm contact with top surface of runner flanges.

3. 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.
4. 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.

3.4 FIELD QUALITY CONTROL

- A. Acoustical panel ceiling hangers, anchors, and fasteners will be considered defective if they do not pass tests and inspections.

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.
- B. Remove and replace ceiling components that cannot be successfully cleaned and restored to permanently eliminate evidence of damage.

END OF SECTION 09 51 13

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 Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Resilient base.
 - 2. Resilient stair accessories.
 - 3. Abrasive safety strips.
 - 4. Resilient molding accessories.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Resilient base: rubber RB.
 - 2. Resilient one-piece stair tread and riser units.
 - 3. Reducers.
 - 4. Edge guards.
 - 5. Adapters.
 - 6. Nosing for carpet
 - 7. Nosing for resilient floor coverings.
 - 8. Trowelable leveling and patching compounds.
 - 9. Concrete slab primer.
 - 10. Adhesives.
 - 11. Stair-tread-nose filler.
- B. Samples for Verification and Initial Color Selection:
 - 1. For each type of product indicated, in manufacturer's standard-size Samples but not less than 2-1/2 inches long, of each resilient product color, texture, and pattern required.

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.
 - 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.

1.6 QUALITY ASSURANCE

- A. Source Limitations for Resilient Base and Accessories: Obtain each type of resilient base and accessories from a single source with resources to provide materials of consistent quality in appearance and physical properties.
- B. Fire-Test-Response Characteristics: 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.

1.7 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 55 deg F or more than 90 deg F.

1.8 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 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. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 90 deg F.
- C. Install resilient products after other finishing operations, including painting, have been completed.

PART 2 - PRODUCTS

2.1 RESILIENT BASE: RUBBER RB

A. Resilient Base:

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. Mannington Commercial; Premium Rubber Edge.
 - b. Johnsonite; Rubber Wall Base.
 - c. Roppe Corporation, USA; Pinnacle Series Rubber Wall Base

B. Resilient Base Standard: ASTM F 1861.

1. Material Requirement: Type TP (rubber, thermoplastic).
2. Manufacturing Method: Group I (solid, homogeneous).
3. Style: Cove (base with toe).

C. Minimum Thickness: 0.125 inch.

D. Height: 4 inches.

E. Lengths: Coils in manufacturer's standard length, not less than 100 feet.

F. Outside Corners: Job formed.

G. Inside Corners: Job formed.

H. Colors and Patterns: As selected by Architect from full range of industry colors.

2.2 RESILIENT STAIR ACCESSORIES: RUBBER RS

A. Resilient One-piece Stair Tread and Riser Units:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Johnsonite; Hammered Surface Texture Rubber Stair Tread with Integrated Riser VIHTR or comparable product by one of the following :
 - a. Mannington Commercial.
 - b. Nora Rubber Flooring; Freudenberg Building Systems, Inc.

B. Resilient Stair Treads Standard: ASTM F 2169.

1. Material Requirement: Type TS (rubber, vulcanized thermoset).

2. Surface Design:

- a. Class 2, Pattern: Hammered, with abrasive strips, with contrasting color for the visually impaired.
- C. Nosing Style: Square.
- D. Nosing Height: 2 inches.
- E. Thickness: 0.210 inch and tapered to back edge of 0.113 inch.
- F. Size: Lengths and depths to fit each stair tread in one piece or, for treads exceeding maximum lengths manufactured, in equal-length units, with integral riser.
- G. Stringers: 0.080-inch thickness, height and length after cutting to fit risers and treads and to cover stair stringers; produced by same manufacturer as treads and recommended by manufacturer for installation with treads.
- H. Warranty: 10 year
- I. Colors and Patterns: As selected by Architect from full range of industry colors.

2.3 RESILIENT MOLDING ACCESSORY

A. Resilient Molding Accessory:

- 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. Reducer:

- 1) Johnsonite; RR-XX Series Reducers.
 - 2) Roppe Corporation, USA; Reducer 1/8 inch.

- b. Adapters:

- 1) Johnsonite; CTA-XX Series Adapter.
 - 2) Roppe Corporation, USA; Tile and Carpet Joiner.

- c. Nosing for Resilient Floor Covering:

- 1) Johnsonite; VIRCN-XX-B2 Vinyl Stair Nosing.
 - 2) Roppe Corporation, USA; #9 Underlap Stair Nosing.

B. Material: Vinyl or rubber.

C. Profile and Dimensions: As indicated.

D. Colors and Patterns: As selected by Architect from full range of manufacturers colors including custom, non-promoted and metallic industry colors.

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 manufacturer for applications indicated.
 - 1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:
 - a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
 - b. Portland Cement-Based Patching: SD-P Insta Patch.
 - c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.
- B. Concrete Slab Primer: Non-staining type recommended by resilient accessories manufacturer.
- C. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.
 - 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)..
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Stair-Tread-Nose Filler: Two-part epoxy compound recommended by resilient tread manufacturer to fill nosing substrates that do not conform to tread contours.

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.
- B. 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.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare substrates according to manufacturer's written instructions to ensure adhesion of resilient products.

- B. Concrete Substrates for Resilient Stair Treads and Accessories: 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 manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer.
 - 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, 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, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.
- C. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
- D. Do not install resilient products until they are same temperature as the space where they are to be installed.
 - 1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- E. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

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 practicable 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. Job-Formed Corners- using manufactures approved methods and tools:
 - 1. Outside Corners: Use straight pieces of maximum lengths possible. Form without producing discoloration (whitening) at bends.
 - 2. Inside Corners: Use straight pieces of maximum lengths possible. Use scribing and cutting measures approved by base manufacturer. Inside corners that are not scribed to fit will be rejected.
 - 3. Use Crane #532 top-set gouger tool for all required for tight wrap and curved corners.

3.4 RESILIENT ACCESSORY INSTALLATION

- A. Comply with manufacturer's written instructions for installing resilient accessories.
- B. Resilient Stair Accessories:
 - 1. Use stair-tread-nose filler to fill nosing substrates that do not conform to tread contours.
 - 2. Tightly adhere to substrates throughout length of each piece.
 - 3. For treads installed as separate, equal-length units, install to produce a flush joint between units.
- C. Abrasive Safety Strips:
 - 1. Apply two abrasive safety strips full width to each stair tread as indicated, one inch from nosing edge, and one inch apart.
 - 2. Apply abrasive safety strips full width to ramp as indicated, at every six inches on center.
- D. Resilient Molding Accessories: Butt to adjacent materials and tightly adhere to substrates throughout length of each piece. Install reducer strips at edges of carpet and resilient floor covering that would otherwise be exposed.

3.5 CLEANING AND PROTECTION

- A. Comply with manufacturer's written instructions for cleaning and protection of 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 surfaces thoroughly.
 - 3. Damp-mop surfaces to remove marks and soil.
 - 4. Do not wash floor until after the period recommended by manufacturer.

- C. Protect resilient products from marks, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
- D. Cover resilient products until Substantial Completion.

END OF SECTION 09 65 13

SECTION 09 65 19 - RESILIENT TILE FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Luxury vinyl floor tile
 - 2. Rubber floor tile.
 - 3. Vinyl composition floor tile.
 - 4. Movement joint.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Luxury vinyl tile LVT
 - 2. Rubber floor tile RF1.
 - 3. Vinyl composition floor tile VCT1.
 - 4. Trowelable leveling and patching compounds.
 - 5. Concrete slab primer.
 - 6. Adhesives.
 - 7. Movement Joint
 - 8. Floor polish.
- B. Shop Drawings: For each type of floor tile. Include floor tile layouts, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - 1. Show details of patterns.
 - 2. Show base details.
 - 3. Show locations of divider strips, control, and expansion joints.
 - 4. Show locations of floor drains and sloped slabs.
 - 5. Show threshold locations and types.
- C. Samples for Verification and Initial Color Selection: Full-size units of each color and pattern of floor tile required.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each type of floor tile to include in maintenance manuals.

1.7 MATERIALS MAINTENANCE 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 1 box for every 50 boxes or fraction thereof, of each type, color, and pattern of floor tile installed.

1.8 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 indicated.
 - 1. Engage an installer who employs workers for this Project who are trained or certified by manufacturer for installation techniques required.
- B. Source Limitations for Resilient Tile: Obtain each type of resilient tile from a single source with resources to provide materials of consistent quality in appearance and physical properties.
- C. Fire-Test-Response Characteristics: 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.
- 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 for floor tile including accessories.
 - a. Size: Minimum 100 sq. ft. for each type, color, and pattern in locations directed by Architect.

1.9 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 55 deg F or more than 90 deg F. Store floor tiles on flat surfaces.

1.10 PROJECT CONDITIONS

- A. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F or more than 90 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. Until Substantial Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F or more than 90 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. Low-Emitting Materials: Flooring system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 HIGH PERFORMANCE LUXURY VINYL TILE -**LVT1** and **LVT3**

- 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. Interface: Studio Set and Studio Set 2.
- B. Tile Standard: ASTM F 1700.
 - 1. Class: Class III, printed film vinyl tile.
 - 2. Type: Type B, embossed surface.
- C. Thickness: 4.5mm.
- D. Size: 25cm x 1 m.
- E. Colors and Patterns: As selected by Architect from full range of industry colors, up to 4 colors per building.

2.3 HIGH PERFORMANCE LUXURY VINYL TILE -LVT2

- 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. Interface: Stargazing Collection and Native Fabric.
- B. Tile Standard: ASTM F 1700.
 - 1. Class: Class III, printed film vinyl tile.
 - 2. Type: Type B, embossed surface.
- C. Thickness: 4.5mm.
- D. Size: 50 cm x 50 cm.
- E. Colors and Patterns: As selected by Architect from full range of industry colors, up to 4 colors per building.

2.4 HIGH PERFORMANCE LUXURY VINYL TILE -LVT4

- 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. Interface: Studio Set and Studio Set 2.
- B. Tile Standard: ASTM F 1700.
 - 1. Class: Class III, printed film vinyl tile.
 - 2. Type: Type B, embossed surface.
- C. Thickness: 3.0 mm.
- D. Size: 25cm x 1 m- Studio Set, 50cm x 50 cm - Native Fabrics.
- E. Colors and Patterns: As selected by Architect from full range of industry colors, up to 4 colors per building.

2.5 VINYL COMPOSITION FLOOR TILE - VCT1

- 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. Field Tile:
 - a. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture (including Imperial Texture Classics) and Standard Excelon MultiColor.
 - b. Johnsonite Flooring – the Azrock collection, (including standard, textile and solids collections).

2. Accent Tile 30%:

- a. Armstrong World Industries, Inc.; Standard Excelon Imperial Texture (including Imperial Texture Classics), Standard Excelon MultiColor, and Standard Excelon Rave.
- b. Johnsonite Flooring – the Azrock collection, (including standard, textile and solids collections).

B. Tile Standard: ASTM F 1066, Class 2, through-pattern tile.

C. Wearing Surface: Smooth.

D. Thickness: 0.125 inch, 1/8inch.

E. Size: 12 by 12 inches.

F. Colors and Patterns: As selected by Architect from full range of industry colors.

1. Provide accent tile equal to 30 percent of total vinyl composition floor tile area, with the remainder as field tile.

2.6 RUBBER FLOOR TILE - RF1

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. Mannington Commercial Flooring Products ; Colorscape tile flooring – Hammered rubber tile.
2. Johnsonite; Roundel tile flooring- Raised round, Raised Square, Hammered rubber tile.
3. Nora Rubber Flooring, Freudenberg Building Systems, Inc.; Norament tile flooring – Studded, Hammered rubber tile.

B. Tile Standard: ASTM F 1344, Class I-A, homogeneous rubber tile, solid color.

C. Hardness: Not less than 85 as required by ASTM F 1344, measured using Shore, Type A durometer per ASTM D 2240.

D. Wearing Surface: Smooth Textured Molded pattern.

1. Molded-Pattern Figure: Raised discs, raised squares, Hammered.

E. Thickness: 0.125 inch.

F. Size: 18.125 x 18.125 inches, 24 x 24 inches, 19.8 x 19.8 inches.

G. Colors and Patterns: As selected by Architect from full range of industry colors.

2.7 INSTALLATION MATERIALS

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
 - 1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:
 - a. Portland Cement-Based Flash Patching and Skim Coating: SD-F Feather Finish.
 - b. Portland Cement-Based Self-Leveling Underlayment: K-10/K60 Self-Leveling Underlayment Concrete.
- B. Concrete Slab Primer: Non-staining type recommended by resilient tile flooring manufacturer.
- C. Adhesives: Water-resistant type recommended by manufacturer to suit floor tile and substrate conditions indicated.
 - 1. Adhesives shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
 - a. VCT Adhesives: Not more than 50 g/L.
 - b. Rubber Floor Adhesives: Not more than 60 g/L.
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- D. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer, containing not less than 16 to 25 percent solids.

2.8 METAL MOVEMENT JOINT

- A. Metal Movement Joint: Surface joint profile to match tile and setting-bed thickness, Aluminum or Stainless steel with soft thermoplastic rubber movement zone. Profile and thickness to be determined per material specified.
 - 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. Schluter Systems L. P. – Dilex Movement Joints.

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.

- B. 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.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare substrates according to 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 manufacturer. Do not use solvents.
 - 3. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 4. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, 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.
 - 1) At a minimum, test concrete substrates in at least 3 locations in separate parts of the floor for applications of 2000 square feet or less; provide one additional test location for each additional 1000 square feet, or fraction thereof.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.
- C. Wood Subfloors:
 - 1. Verify underlayment surface is free of surface irregularities and substances with potential to interfere with adhesive bond, show through surface, or stain tile.
- D. Existing Floors: Condition of existing subfloor is unknown prior to removal of existing flooring. If, after removal of existing flooring, subfloor requires leveling, patching, or filling, notify Architect in writing.

1. Asbestos Abatement Areas: In areas where removal of existing flooring is included in asbestos abatement procedures, coordinate with entity responsible for abatement to ensure patching and repair is compatible with requirements for installation of resilient tile flooring.
- E. Comply with resilient tile manufacturer's written instructions to prepare substrates.
1. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
 2. Ensure patching and repair materials are compatible with resilient tile.
 3. Levelness Tolerances: Apply patching and repair materials to provide levelness of floor substrate within 1/4 inch in 10 feet unless more stringent levelness is recommended or required by resilient tile manufacturer.
 4. Flash Patching and Skim Coating: Apply flash patching material to areas with 1/8 inch or less depression.
 5. Patching: Apply patching material to areas with 1/8 inch or greater depression.
 6. Self-Leveling Underlayment: Apply self-leveling material to areas where flash patching and patching described above cannot provide smooth, level surface acceptable to receive resilient tile flooring.
- F. Do not install floor tiles until they are same temperature as space where they are to be installed.
1. Move resilient products and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
- G. Sweep and vacuum clean substrates to be covered by resilient products immediately before installation. Following cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust.

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 in pattern indicated.
- C. Laser cut Murals: Provide laser cut murals as indicated on drawings.
1. Artwork for Mural location is as shown on Architectural drawings. Mural to be laser cut/etched will be submitted to manufacture as a file during construction. Mural is to be provided by client.

2. Full color computer drawing from manufacture, will be submitted to designer for full approval including all mounting and assembly instructions.
 3. Deliver mural to site with dot mounted backing, paper faced and numbered for easy installation. Contractor to provide proper storage until installation.
- D. 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 as follows: 12" x 12"
 - a. Field Tile: to match adjacent in pattern of colors and sizes indicated.
 - b. Accent Tile: to match adjacent in pattern of colors and sizes indicated.
- E. 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.
1. Cut rubber floor tile using waterjet cut method only. Template cuts are prohibited.
- F. Extend floor tiles into toe spaces, door reveals, closets, and similar openings. Extend floor tiles to center of door openings.
- G. 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, non-staining marking device.
- H. Install floor tiles on covers for telephone and electrical ducts, building expansion-joint covers, and similar items in finished floor areas. Maintain overall continuity of color and pattern between pieces of tile installed on covers and adjoining tiles. Tightly adhere tile edges to substrates that abut covers and to cover perimeters.
- I. Apply concrete slab primer, if recommended by resilient tile manufacturer, prior to applying adhesive. Apply according to manufacturer's written instructions.
- J. 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 protection of 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.
 4. Do not wash floor until after the period recommended by resilient tile manufacturer.

- C. Protect floor tile products 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, visible adhesive, and surface blemishes from floor tile surfaces before applying liquid floor polish.
- E. Cover floor tile until Substantial Completion.
- F. Perform the following operations in each area of Project upon completion of floor installation and as recommended by manufacturer.
 - 1. Rubber Floor Tile:
 - a. Scrub floor with a neutral detergent solution at 4 oz per gallon to remove factory finish. Scrub floor using soft nylon brushes or red pad as recommended by rubber floor tile manufacturer.
 - b. Use stripping solutions at badly soiled or scratched areas, as recommended by rubber floor tile manufacturer.
 - c. Thoroughly rinse floor, wet vacuum, and dry floor. Floor must be free from all dust, dirt and any particles that may become lodged in final polish application.
 - d. Apply a maintainer coat of Taski Wiwax solution as recommended by resilient tile and polish manufacturer. Dry buff using a disc rotary machine, white pad or soft nylon brush, not to exceed 300 rpm, after rubber floor tile dries.
 - 2. Vinyl Composition Floor Tile:
 - a. Scrub floor with a neutral detergent solution at 4 to 6 oz per gallon. Scrub floor using pads or brushes as recommended by vinyl composition floor tile manufacturer.
 - b. Use stripping solutions at badly soiled or scratched areas, as recommended by vinyl composition floor tile manufacturer.
 - c. Thoroughly rinse floor, wet vacuum, and dry floor. Floor must be free from all dust, dirt and any particles that may become lodged in final polish application.
 - d. Apply five coats of commercial floor polish. Apply each coat as recommended by product manufacturer.

END OF SECTION 09 65 19

SECTION 09 66 23 - RESINOUS MATRIX TERRAZZO FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 1. Thin-set, epoxy-resin matrix terrazzo flooring – poured epoxy.
 2. Epoxy-resin matrix terrazzo base - Precast.

1.3 DEFINITIONS

- A. Aggregate: Marble, Glass and Granite chips.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 1. Thin-set, epoxy-resin matrix terrazzo flooring- poured epoxy.
 2. Epoxy- resin matrix terrazzo base- precast.
 3. Thin-set divider strips.
 4. Heavy-top divider strips.
 5. Control-joint strips.
 6. Accessory strips.
 7. Abrasive strips.
 8. Anchoring devices.
 9. Patching and fill material.
 10. Joint compound.
 11. Resinous matrix terrazzo cleaner.
 12. Sealer.
- B. Shop Drawings: Submit set of drawings showing complete floor patterns in all areas indicated on Drawings to receive terrazzo. Submit drawings for Architect review prior to starting installation. Shop drawings are to including but not limited to:

1. Floor plans showing all patterns, precast base locations and details.
 2. Layouts showing locations of divider strips, control and expansion joints.
 3. Locations of all floor drains including sloped slab locations.
 4. Marble threshold location.
 5. Photocopies of Tetra Tech documentation not acceptable.
 6. Divider strips.
 7. Control-joint strips.
 8. Accessory strips.
 9. Precast terrazzo jointing and edge configurations.
 10. Terrazzo patterns.
- C. Samples for Verification and Initial Color Selection: For each type, material, color, and pattern of terrazzo and accessory required showing the full range of color, texture, and pattern variations expected. Label each terrazzo sample to identify manufacturer's matrix color and aggregate types, sizes, and proportions. Prepare Samples of same thickness and from same material to be used for the Work, in size indicated below:
1. Poured Terrazzo: 6-inch-square Samples.
 2. Precast Terrazzo: 6-inch-square Samples.
 3. Accessories: 6-inch-long Samples of each exposed strip item required.
 4. NTMA color plates showing the full range of colors and patterns available for each terrazzo type

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Material Certificates: For each type of terrazzo material or product, from manufacturer.
- C. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For terrazzo to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications:
 1. Engage an installer who is a contractor member of NTMA.
 2. Engage an installer who is certified in writing by terrazzo manufacturer as qualified to install manufacturer's products.
- B. Source Limitations: Obtain primary terrazzo materials from single source from single manufacturer. Provide secondary materials including patching and fill material, joint sealant, and repair materials of type and from source recommended by manufacturer of primary materials.

- C. Source Limitations for Aggregates: Obtain each color, grade, type, and variety of granular materials from single source with resources to provide materials of consistent quality in appearance and physical properties.
- 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 for terrazzo including accessories.
 - a. Size: Minimum 100 sq. ft. of typical poured-in-place flooring condition for each color and pattern in locations directed by Architect.
 - b. Include base.
 - 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.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in supplier's original wrappings and containers, labeled with source's or manufacturer's name, material or product brand name, and lot number if any.
- B. Store materials in their original, undamaged packages and containers, inside a well-ventilated area protected from weather, moisture, soiling, extreme temperatures, and humidity.

1.10 FIELD CONDITIONS

- A. Environmental Limitations: Comply with manufacturer's written instructions for substrate temperature, ambient temperature, moisture, ventilation, and other conditions affecting terrazzo installation.
- B. Field Measurements: Verify actual dimensions of construction contiguous with precast terrazzo by field measurements before fabrication.
- C. Provide permanent lighting or, if permanent lighting is not in place, simulate permanent lighting conditions during terrazzo installation.
- D. Close spaces to traffic during terrazzo application and for not less than 24 hours after application unless manufacturer recommends a longer period.
- E. Control and collect water and dust produced by grinding operations. Protect adjacent construction from detrimental effects of grinding operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. NTMA Standards: Comply with NTMA's "Terrazzo Specifications and Design Guide" and with written recommendations for terrazzo type indicated unless more stringent requirements are specified.

2.2 EPOXY-RESIN MATRIX TERRAZZO-POURED EPOXY

- A. Thin-set, Epoxy-Resin Matrix Terrazzo: Comply with NTMA's "Terrazzo Specifications and Design Guide" and manufacturer's written instructions for matrix and aggregate proportions and mixing.

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. General Polymers Corporation; Terrazzo 1100.
 - b. Key Resin Company; Key Epoxy Terrazzo.
2. Thickness: 3/8 inch nominal.
3. Formulated Mix Color and Pattern: To match existing or As selected by Architect from NTMA terrazzo plates.
4. Custom Mix Color and Pattern: Match Architect's sample Match existing.
5. Aggregate and Matrix colors to be selected by architect. Matrix color to be selected from entire line of Sherwin Williams colors.

- B. Materials:

1. Crack Isolation Membrane with Scrim: A two component, 100 percent solid flexible epoxy membrane applied at 40 square feet per gallon, yielding 40 mils in thickness. Provide Crack Isolation Membrane over 100% of surface to be covered with epoxy flooring- all floor levels. Provide scrim over all new and existing cracks as per manufactures recommendations. For all second and third floor applications, provide scrim over 100% of surface to be covered with epoxy flooring.
 - a. Similar to "Epoflex" by General Polymers, Cincinnati Ohio.
2. Primer: Manufacturer's product recommended for substrate and use indicated.
3. Thin-set Epoxy-Resin Matrix-Poured Epoxy: Manufacturer's standard recommended for use indicated and in color required for mix indicated.
 - a. Physical Properties without Aggregates:
 - 1) Hardness: 60 to 85 per ASTM D 2240, Shore D.

- 2) Minimum Tensile Strength: 3000 psi per ASTM D 638 for a 2-inch specimen made using a "C" die per ASTM D 412.
- 3) Minimum Compressive Strength: 10,000 psi per ASTM D 695, Specimen B cylinder.
- 4) Chemical Resistance: No deleterious effects by contaminants listed below after seven-day immersion at room temperature per ASTM D 1308.
 - a) Distilled water.
 - b) Mineral water.
 - c) Isopropanol.
 - d) Ethanol.
 - e) 0.025 percent detergent solution.
 - f) 1.0 percent soap solution.
 - g) 10 percent sodium hydroxide.
 - h) 10 percent hydrochloric acid.
 - i) 30 percent sulfuric acid.
 - j) 5 percent acetic acid.
- b. Physical Properties with Aggregates: For resin blended with Georgia white marble, ground, grouted, and cured per requirements in NTMA's "Terrazzo Specifications and Design Guide"; comply with the following:
 - 1) Flammability: Self-extinguishing, maximum extent of burning 1/4 inch per ASTM D 635.
 - 2) Thermal Coefficient of Linear Expansion: 0.0025 inch/inch per deg F for temperature range of minus 12 to plus 140 deg F per ASTM D 696.
4. Aggregates: Comply with NTMA gradation standards for mix indicated and contain no deleterious or foreign matter.
 - a. Abrasion and Impact Resistance: Less than 40 percent loss per ASTM C 131.
 - b. 24-Hour Absorption Rate: Less than 0.75 percent.
 - c. Dust Content: Less than 1.0 percent by weight.
5. Finishing Grout: Resin based.

2.3 EPOXY-RESIN MATRIX TERRAZZO BASE- PRECAST

- A. Epoxy Resin Matrix Terrazzo Base- Precast: Minimum 3/8-inch-thick, reinforced epoxy resin matrix terrazzo base- precast cast in maximum lengths possible, but not less than 36 inches. Comply with NTMA's written recommendations for fabricating precast terrazzo base units in sizes and profiles indicated.
 1. Type: Refer to details.
 2. Top Edge: Radius edge with polished top surface.
 3. Outside Corner Units: With finished returned edges at outside corner.
 4. Aggregate and Matrix colors to be selected by architect. Matrix color to be selected from entire line of Sherwin Williams colors.

2.4 STRIP MATERIALS

- A. Thin-Set Divider Strips: L-type angle, 1/4 inch deep.
 - 1. Material: To match existing.
 - 2. Top Width: To match existing.
- B. Heavy-Top Divider Strips: L-type angle in depth required for topping thickness indicated.
 - 1. Bottom-Section Material: Matching top-section material.
 - 2. Top-Section Material: To match existing.
 - 3. Top-Section Width: To match existing.
- C. Control-Joint Strips: Separate, double L-type angles, positioned back-to-back, that match material and color of divider strips and in depth required for topping thickness indicated.
- D. Accessory Strips: Match divider-strip width, material, and color unless otherwise indicated. Use the following types of accessory strips as required to provide a complete installation:
 - 1. Edge-bead strips for exposed edges of terrazzo.

2.5 MISCELLANEOUS ACCESSORIES

- A. Anchoring Devices:
 - 1. Strips: Provide mechanical anchoring devices or adhesives for strip materials as recommended by manufacturer and required for secure attachment to substrate.
 - 2. Precast Epoxy Resin Matrix Terrazzo: Provide mechanical anchoring devices as recommended by fabricator for proper anchorage and support of units for conditions of installation and support.
- B. Patching and Fill Material: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- C. Joint Compound: Terrazzo manufacturer's resinous product approved and recommended by manufacturer for application indicated.
- D. Resinous Matrix Terrazzo Cleaner: Chemically neutral cleaner with pH factor between 7 and 10 that is biodegradable, phosphate free, and recommended by sealer manufacturer for use on terrazzo type indicated.
- E. Sealer: Slip- and stain-resistant, penetrating-type sealer that is chemically neutral; does not affect terrazzo color or physical properties; is recommended by sealer manufacturer; and complies with NTMA's "Terrazzo Specifications and Design Guide" for terrazzo type indicated.
 - 1. Surface Friction: Not less than 0.6 according to ASTM D 2047.
 - 2. Acid-Base Properties: With pH factor between 7 and 10.
 - 3. Sealers shall have a VOC content of 200 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 and 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, including levelness tolerances, have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Clean substrates of substances, including oil, grease, and curing compounds, that might impair terrazzo bond. Provide clean, dry, and neutral substrate for terrazzo application.
- B. Concrete Slabs:
 - 1. Provide sound concrete surfaces free of laitance, glaze, efflorescence, curing compounds, form-release agents, dust, dirt, grease, oil, and other contaminants incompatible with terrazzo.
 - a. Shot-blast surfaces with an apparatus that abrades the concrete surface, contains the dispensed shot within the apparatus, and recirculates the shot by vacuum pickup.
 - b. Repair damaged and deteriorated concrete according to terrazzo manufacturer's written recommendations.
 - c. Use patching and fill material to fill holes and depressions in substrates according to terrazzo manufacturer's written instructions.
- C. 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 indicated below.
 - a. Calcium Chloride Test: Perform anhydrous calcium chloride test per 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.
 - 1) Perform tests so that each test area does not exceed 200 sq. ft., and perform not less than two tests in each installation area and with test areas evenly spaced in installation areas.
 - b. In-Situ Probe Test: Perform relative-humidity test using in-situ probes per ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative-humidity-level measurement.
 - c. Proceed with installation only after substrates pass testing.

- D. Protect other work from water and dust generated by grinding operations. Control water and dust to comply with environmental protection regulations.
 - 1. Erect and maintain temporary enclosures and other suitable methods to limit water damage and dust migration and to ensure adequate ambient temperatures and ventilation conditions during installation.

3.3 EPOXY-RESIN MATRIX TERRAZZO INSTALLATION- POURED EPOXY

- A. Comply with NTMA's written recommendations for terrazzo and accessory installation.
- B. Place, rough grind, grout, cure grout, fine grind, and finish terrazzo according to manufacturer's written instructions and NTMA's "Terrazzo Specifications and Design Guide."
- C. Installation Tolerance: Limit variation in terrazzo surface from level to 1/4 inch in 10 feet; noncumulative.
- D. Ensure that matrix components and fluids from grinding operations do not stain terrazzo by reacting with divider and control-joint strips.
- E. Delay fine grinding until heavy trade work is complete and construction traffic through area is restricted.
- F. Flexible Reinforcing Membrane:
 - 1. Prepare and prefill substrate cracks with membrane material.
 - 2. Install membrane to produce full substrate coverage in areas to receive terrazzo.
 - 3. Reinforce membrane with fiberglass scrim at substrate cracks and at all slabs other than slabs-on-grade.
 - 4. Prepare membrane according to manufacturer's written instructions before applying substrate primer.
- G. Primer: Apply to terrazzo substrates according to manufacturer's written instructions.
- H. Strip Materials:
 - 1. Divider and Control-Joint Strips:
 - a. Locate divider strips in locations indicated.
 - b. Install control-joint strips back-to-back directly above concrete-slab control joints.
 - c. Install control-joint strips with 1/4-inch -VIF gap between strips and install sealant in gap.
 - d. Install strips in adhesive setting bed without voids below strips, or mechanically anchor strips as required to attach strips to substrate, as recommended by strip manufacturer.

2. Accessory Strips: Install as required to provide a complete installation and in locations indicated.
3. Abrasive Strips: Install with surface of abrasive strip positioned 1/16 inch higher than terrazzo surface.

3.4 EPOXY RESIN MATRIX TERRAZZO INSTALLATION BASE-PRECAST

- A. Install epoxy resin matrix terrazzo base-precaster, treads-precaster using method recommended by NTMA and manufacturer unless otherwise indicated.
- B. Do not install base-precaster, or treads-precaster that are chipped, cracked, discolored, or not properly finished.
- C. Seal joints between base-precaster, or treads-precaster with joint compound matching precast terrazzo matrix.

3.5 REPAIR

- A. Cut out and replace terrazzo areas that evidence lack bond with substrate. Cut out terrazzo areas in panels defined by strips and replace to match adjacent terrazzo, or repair panels according to NTMA's written recommendations, as approved by Architect.

3.6 CLEANING AND PROTECTION

- A. Cleaning:
 1. Remove grinding dust from installation and adjacent areas.
 2. Wash surfaces with cleaner according to NTMA's written recommendations and manufacturer's written instructions; rinse surfaces with water and allow them to dry thoroughly.
- B. Sealing:
 1. Seal surfaces according to NTMA's written recommendations.
 2. Apply sealer according to sealer manufacturer's written instructions.
- C. Protection: Provide final protection and maintain conditions, in a manner acceptable to Installer, that ensure that terrazzo is without damage or deterioration at time of Substantial Completion.

END OF SECTION 09 66 23

SECTION 09 68 13 - TILE CARPETING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Carpet tile.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include manufacturer's written data on physical characteristics, durability, and fade resistance. Include installation recommendations for each type of substrate.
 - 1. Carpet tile.
 - 2. Trowelable leveling and patching compounds.
 - 3. Adhesives.
 - 4. Metal edge/transition strip.
- B. Shop Drawings: Show the following:
 - 1. Columns, doorways, enclosing walls or partitions, built-in cabinets, and locations where cutouts are required in carpet.
 - 2. Carpet type, color, and dye lot.
 - 3. Seam locations, types, and methods.
 - 4. Type of subfloor.
 - 5. Type of installation.
 - 6. Pattern type, repeat size, location, direction, and starting point.
 - 7. Type, color, and location of edge, transition, and other accessory strips.
 - 8. Transition details to other flooring materials.
 - 9. Base details.
- C. Samples for Verification and Initial Color Selection: 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.

D. Sample Warranty: For special warranty.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For carpet tile, for tests performed by a qualified testing agency.

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.
- B. Warranty: Executed special warranty.

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.
- C. Floor Radiant Panel Test: Flooring material meets the ASTM E -648 Radiant Panel Test, Class 1 requirements.

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, 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 C2

- A. Basis of design product: Subject to compliance with requirements, provide, "Aerial Flying Colors" or by the following:
 - 1. Or approved equal.
- B. Pattern: Aerial Flying Colors – "AE315"
- C. Color: As selected by Architect from manufacturer's full range.
- D. Fiber Content: 100 percent nylon 6.
- E. Fiber Type: Aquafil
- F. Pile Characteristic: Tufted Textured Pattern Loop Pile
- G. Pile Density: 6400
- H. Pile Thickness: 0.090 in.
- I. Primary Backing/Backcoating: GlasBac.
- J. Size: 25cm x 1 m.

- K. Applied Soil-Resistance Treatment: Manufacturer's standard material.
- L. Antimicrobial Treatment: Manufacturer's standard material.
- M. Performance Characteristics: As follows:
 - 1. Appearance Retention Rating: Heavy traffic, 3.0 minimum according to ASTM D 7330.
 - 2. Critical Radiant Flux Classification: Not less than Class A-0.45 W/sq. cm.
 - 3. Electrostatic Propensity: Less than 3.0 kV according to AATCC 134.
 - 4. Emissions: Provide carpet tile that complies with testing and product requirements of CRI's "Green Label Plus" program.
 - 5. Emissions: Provide carpet tile that complies with the product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, hydraulic-cement-based formulation provided or recommended by carpet tile manufacturer.
 - 1. Basis-of-Design Products: Subject to compliance with requirements, provide the following Ardex product or a comparable product:
 - a. Portland Cement-Based Flash Patching and Skim Coating: Feather Finish.
 - b. Portland Cement-Based Patching: SD-P.
 - c. Portland Cement-Based Self-Leveling Underlayment: K-10/K-60 Self-Leveling Underlayment Concrete.
- B. Adhesives: Water-resistant, mildew-resistant, non-staining, 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).
 - 2. Adhesives shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Metal Edge/Transition Strips: Extruded aluminum with finish selected by Architect, of profile and width shown, of height required to protect exposed edge of carpet, and of maximum lengths to minimize running joints.

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.
 - 4. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - 5. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - a. Perform anhydrous calcium chloride test, 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.
 - 1) At a minimum, test concrete substrates in at least 3 locations in separate parts of the floor for applications of 2000 square feet or less; provide one additional test location for each additional 1000 square feet, or fraction thereof.
 - b. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have maximum 75 percent relative humidity level measurement.
- C. For wood subfloors, verify the following:
 - 1. Underlayment over subfloor complies with requirements specified in Section 06 10 00 "Rough Carpentry."
 - 2. Underlayment surface is free of irregularities and substances that may interfere with adhesive bond or show through surface.
- D. Existing Floors: Condition of existing subfloor is unknown prior to removal of existing flooring. If, after removal of existing flooring, subfloor requires leveling, patching, or filling, notify Architect in writing.

1. Asbestos Abatement Areas: In areas where removal of existing flooring is included in asbestos abatement procedures, coordinate with entity responsible for abatement to ensure patching and repair is compatible with requirements for installation of carpet.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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.
 1. Ensure patching and repair materials are compatible with carpet tile.
 2. Levelness Tolerances: Apply patching and repair materials to provide levelness of floor substrate within 1/4 inch in 10 feet, unless more stringent levelness is recommended or required by carpet tile manufacturer.
 3. Flash Patching and Skim Coating: Apply flash patching material to areas with 1/8 inch or less depression.
 4. Patching: Apply patching material to areas with 1/8 inch or greater depression.
 5. Self-Leveling Underlayment: Apply self-leveling material to areas where flash patching and patching described above cannot provide smooth, level surface acceptable to receive carpet tile.
- 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. Comply with CRI 104, Section 14, "Carpet Modules," and with carpet tile manufacturer's written installation instructions.
- B. Installation Method: As recommended in writing by carpet tile manufacturer.
- 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.
- H. Stagger joints of carpet tiles so carpet tile grid is offset from access flooring panel grid. Do not fill seams of access flooring panels with carpet adhesive; keep seams free of adhesive.

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

SECTION 09 72 00 - WALL COVERINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Projection/Marker Board Wall Covering.
 - 2. Tackable wall covering

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include data on physical characteristics, durability, fade resistance, and flame-resistance characteristics.
- B. Shop Drawings: Show location and extent of each wall-covering type. Indicate seams and termination points.
- C. Samples for Verification and Initial Color Selection: Full width by 36-inch-long section of wall covering and molding samples not less than 12 inches long.
 - 1. Sample from same print run or dye lot to be used for the Work, with specified treatments applied. Show complete pattern repeat. Mark top and face of fabric.
 - 2. Sample from same flitch to be used for the Work, with specified finish applied.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for wall covering.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For wall coverings to include in maintenance manuals.

1.7 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. Wall-Covering Materials: For each type, full-size units equal to 10 percent of amount installed, but not less than one full roll.

1.8 QUALITY ASSURANCE

- 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: As follows, per ASTM E 84:
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 - 2. Fire-Growth Contribution: Textile wall coverings tested according to NFPA 265- non sprinklered area, on partitions of 8 feet or above, NFPA 286 non-sprinklered area on partitions less than 8 feet and complying with test protocol and criteria in the 2003 IBC.

1.9 PROJECT 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 occupancy levels during the remainder of the construction period.
 - 1. Maintain a consistent temperature of not less than 60 deg F in installation areas for at least 10 days before and 10 days after installation, unless otherwise recommended by wall covering manufacturer.
 - 2. Wood-Veneer Wall Coverings: Condition spaces for not less than 48 hours before installation.
- B. Lighting: Do not install wall covering until a permanent level of lighting 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. Low-Emitting Materials: Wall covering system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 WALL COVERINGS

- A. General: Provide rolls of each type of wall covering from same print run or dye lot.

2.3 PROJECTION/MARKER BOARD WALL COVERING

- A. Vinyl, gloss, smooth wallcovering for projection and dry erase markers:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Wall talker "Just-rite"; or comparable product.
- B. Pattern: Visual textured- smooth, high gloss
- C. Total thickness: 17 mils.
- D. Width: 60" inches.
- E. Backing: Non-woven on gyp board.
- F. Adhesive: heavy duty clear or clay based premixed vinyl adhesive as recommended by manufacture.
- G. Substrate primer: White pigmented acrylic base primer/sealer specifically formulated to use with vinyl wallcovering.
- H. Substrate surface: Minimum Level 4 finish, per GA-214-M-97.
- I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range.

2.4 TACKABLE WALLCOVERING

- A. Linoleum resilient homogeneous, self-healing tackable wall surface:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Wall talker "Tac-wall"; or comparable product.
- B. Pattern: C250
- C. Total thickness: ¼ inch.

- D. Width: 47"/48".
- E. Backing: Burlap.
- F. Adhesive: Solvent-free, SBR type linoleum adhesive (L-910) as recommended by manufacture.
- G. Substrate primer: White pigmented acrylic base primer/sealer specifically formulated to use with vinyl wallcovering.
- H. Substrate surface: Minimum Level 4 finish, per GA-214-M-97.
- I. Colors, Textures, and Patterns: As selected by Architect from manufacturer's full range, of min. 12 colors.

2.5 ACCESSORIES

- A. Adhesive: Mildew-resistant, non-staining, strippable adhesive, for use with specific wall covering and substrate application as recommended in writing by wall-covering manufacturer.
 - 1. Adhesive shall meet California indoor air quality Specification 01350
 - 2. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- B. Primer/Sealer: Mildew resistant, complying with requirements in Section 09 90 00 "Painting" and recommended in writing by wall-covering manufacturer for intended substrate.
- C. Wall Liner: Nonwoven, synthetic underlayment and adhesive as recommended by wall-covering manufacturer.
- D. Seam Tape: As recommended in writing by wall-covering manufacturer.
- E. Metal Primer: Interior ferrous metal primer complying with Section 09 90 00 "Painting."
- F. Marker/Eraser Dispenser- Provide Plastic marker/eraser dispenser for each board unit, min. one per room.
- G. Trim:
 - 1. Wallcovering for projection and dry erase markers: J-cap, 1/16" aluminum trim, miter at all corners. Secure with mechanical fasteners with self-tapping drywall screws.
 - a. Wallcovering for tackable surface: J-trim, 5/16 aluminum trim, miter at all corners. Secure with mechanical fasteners with self-tapping drywall screws.
 - b. Wall covering for tackable surface: H-trim, 5/16 aluminum trim, for material seams. Secure with mechanical fasteners with self-tapping drywall screws.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for levelness, wall plumpness, maximum moisture content, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

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. Moisture Content: Maximum of 5 percent on new plaster, concrete, and concrete masonry units when tested with an electronic moisture meter.
 - 2. Plaster: Allow new plaster to cure. Neutralize areas of high alkalinity. Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 3. Metals: If not factory primed, clean and apply metal as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 4. Gypsum Board: Prime with primer as recommended in writing by primer/sealer manufacturer and wall-covering manufacturer.
 - 5. Painted Surfaces: Treat areas susceptible to pigment bleeding.
- D. Check painted surfaces for pigment bleeding. Sand gloss, semigloss, and eggshell finish with fine sandpaper.
- E. Remove hardware and hardware accessories, electrical plates and covers, light fixture trims, and similar items.
- F. Acclimatize wall-covering materials by removing them from packaging in the installation areas not less than 24 hours before installation.
- G. Install wall liner, with no gaps or overlaps, where required by wall-covering manufacturer. Form smooth wrinkle-free surface for finished installation. Do not begin wall-covering installation until wall liner has dried.

3.3 INSTALLATION

- A. General: Comply with wall-covering manufacturers' written installation instructions applicable to products and applications indicated except where more stringent requirements apply.
- B. Cut wall-covering strips in roll number sequence. Change roll numbers at partition breaks and corners.
- C. Install strips in same order as cut from roll.
- D. Install reversing every other strip.
- E. Install wall covering with no gaps or overlaps, no lifted or curling edges, and no visible shrinkage.
- F. Match pattern 72 inches above the finish floor.
- G. 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. No horizontal seams are permitted.
- H. Fully bond wall covering to substrate. Remove air bubbles, wrinkles, blisters, and other defects.
- I. Trim edges and seams for color uniformity, pattern match, and tight closure. Butt seams without any overlay or spacing between strips.

3.4 CLEANING

- A. Remove excess adhesive at finished 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 84 33 - SOUND-ABSORBING WALL UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes shop-fabricated, fabric-wrapped panel units tested for acoustical performance, including:
 - 1. Sound-absorbing wall panels.

1.3 DEFINITIONS

- A. NRC: Noise Reduction Coefficient.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of fabric facing, panel edge, core material, and mounting indicated.
 - 1. Sound-absorbing wall panel.
 - 2. Core materials.
 - 3. Facing material.
 - 4. Mounting devices.
- B. Shop Drawings: For sound-absorbing wall units. Include mounting devices and details; details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge and core materials.
 - 1. Include elevations showing panel sizes and direction of fabric weave and pattern matching.
- C. Samples for Verification and Initial Color Selection: For the following products, prepared on samples of size indicated below:

1. Fabric: Full-width by approximately 36-inch-long Sample, but not smaller than required to show complete pattern repeat, from dye lot to be used for the Work, and with specified treatments applied. Mark top and face of fabric.
 2. Panel Edge: 12-inch-long Sample(s) showing each edge profile, corner, and finish.
 3. Core Material: 12-inch-square Sample at corner.
 4. Mounting Devices: Full-size Samples.
 5. Assembled Panels: Approximately 36 by 36 inches, including joints and mounting methods.
- D. Warranty: Sample of special warranty.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Elevations 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. Electrical outlets, switches, and thermostats.
 2. Items penetrating or covered by sound-absorbing wall units including the following:
 - a. Lighting fixtures.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Alarms.
 - e. Sprinklers.
 - f. Access panels.
 3. Show operation of hinged and sliding components covered by or adjacent to sound-absorbing wall units.
- B. Product Certificates: For each type of sound-absorbing wall unit, from manufacturer.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For sound-absorbing wall units to include in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal recommendations.
- B. Warranty: Executed special warranty.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fabric: For each fabric, color, and pattern installed, provide length equal to 10 percent of amount installed, but no fewer than 10 yards.
2. Mounting Devices: Full-size units equal to 5 percent of amount installed, but no fewer than five devices, including unopened adhesives.

1.9 QUALITY ASSURANCE

- A. Source Limitations: Obtain sound-absorbing wall units from single source from single manufacturer.
- B. Fire-Test-Response Characteristics: Provide sound-absorbing wall units meeting the following as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:
 1. Surface-Burning Characteristics: As determined by testing per ASTM E 84.
 - a. Flame-Spread Index: 25 or less.
 - b. Smoke-Developed Index: 450 or less.
 2. Fire Growth Contribution: Meeting acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 and NFPA 286.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Comply with fabric and sound-absorbing wall unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.
- B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.11 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install sound-absorbing wall units until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Lighting: Do not install sound-absorbing wall units until a permanent level of lighting is provided on surfaces to receive the units.
- C. Air-Quality Limitations: Protect sound-absorbing wall units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.
- D. Field Measurements: Verify locations of sound-absorbing wall units and actual dimensions of openings and penetrations by field measurements before fabrication.

1.12 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sound-absorbing wall units that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to the following:
 - a. Acoustical performance.
 - b. Fabric sagging, distorting, or releasing from panel edge.
 - c. Warping of core.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOUND-ABSORBING WALL 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. Conwed Designscape; an Owens Corning company.
 - 2. Kinetics Noise Control, Inc.
 - 3. Unika Vaev.
- B. General Requirements for Sound-Absorbing Wall Units: Units shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
- C. Sound-Absorbing Wall Panel **<Insert drawing designation>**: Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame.
 - 1. Basis-of-Design Product: Kinetics Noise Control, Hardside Acoustical Wall Panels, or approved equal.
 - 2. Mounting: Edge mounted with splines secured to substrate.
 - a. Finish Color at Exposed Edges: As selected by Architect from manufacturer's full range.
 - 3. Mounting: Back mounted with manufacturer's standard metal clips or bar hangers, secured to substrate.
 - 4. Core: glass-fiber board.
 - a. Core-Face Layer: Manufacturer's standard tackable, impact-resistant, high-density board.

5. Edge Construction: Manufacturer's standard chemically hardened core with no frame.
 6. Edge Profile: Square.
 7. Corner Detail in Elevation: Square with continuous edge profile indicated.
 8. Reveals between Panels: Recessed reveals as indicated on Drawings.
 9. Acoustical Performance: Sound absorption NRC of not less than 0.65 according to ASTM C 423 for Type A mounting according to ASTM E 795.
 10. Nominal Overall Panel Thickness: 1 inch.
 11. Panel Width: As indicated on Drawings.
 12. Panel Height: As indicated on Drawings.
- D. Facing Material: Facing Material: Fabric from same dye lot; color and pattern as selected by Architect from manufacturer's full range.
1. Color: To be selected by architect from manufacturer's full range of colors.
 2. Fiber Content: 100 percent woven polyester.

2.2 MATERIALS

A. Core Materials:

1. Glass-Fiber Board: ASTM C 612, Type standard with manufacturer; nominal density of 6 to 7 lb/cu. ft., unfaced, and dimensionally stable, molded rigid board; and with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
2. Fire-Retardant Formed Plastic: Manufacturer's standard formed plastic with flame-spread index of 25 or less and smoke-developed index of 25 or less according to ASTM E 84.
3. Tackable, Impact-Resistant, High-Density Board for Face Layer: 1/8-inch- thick layer of compressed molded glass-fiber board with a nominal density of 16 to 18 lb/cu. ft. laminated to face of core.

B. Mounting Devices: Concealed on back of unit, recommended by manufacturer to support weight of unit, and as follows:

1. Metal Clips or Bar Hangers: Manufacturer's standard two-part metal "Z" clips, with one part of each clip mechanically attached to back of unit and the other part to substrate, designed to permit unit removal.

2.3 FABRICATION

- A. General: Use manufacturer's standard construction except as otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.
 - 1. Glass-Fiber Board Cores: Chemically harden core edges and areas of core where mounting devices are attached.
- B. Core-Face Layer: Evenly stretched over core face and edges and securely attached to core; free from puckers, ripples, wrinkles, or sags.
- C. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.
 - 1. Square Corners: Tailor corners.
 - 2. Fabrics with Directional or Repeating Patterns or Directional Weave: Mark fabric top and attach fabric in same direction so pattern or weave matches in adjacent units.
- D. Dimensional Tolerances of Finished Units: Plus, or minus 1/16 inch for the following:
 - 1. Thickness.
 - 2. Edge straightness.
 - 3. Overall length and width.
 - 4. Squareness from corner to corner.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine fabric, fabricated units, substrates, areas, and conditions, for compliance with requirements, installation tolerances, and other conditions affecting performance of sound-absorbing wall units.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install sound-absorbing wall units in locations indicated with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.
- B. Comply with sound-absorbing wall unit manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.
- C. Align and level fabric pattern and grain among adjacent units.

3.3 INSTALLATION TOLERANCES

- A. Variation from Plumb and Level: Plus, or minus 1/16 inch.
- B. Variation of Panel Joints from Hairline: Not more than 1/16 inch wide.

3.4 CLEANING

- A. Clip loose threads; remove pills and extraneous materials.
- B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 09 84 33

SECTION 09 91 00 – PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and application of paint systems, for the following:

- 1. Interior applications.
 - a. Painting systems indicated on Drawings and in Schedules applied to new and existing exterior and interior surfaces and related components including but not limited to items such as hollow metal doors frames, doors, access doors, trim pieces, window sash, trim and previously painted cabinet heater/fin tube enclosures, exposed ductwork etc., unless otherwise indicated, including appropriate surface preparation for all new or existing surfaces to be painted including previously painted surfaces and surfaces with existing wall coverings

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product for substrates indicated. Include preparation requirements and application instructions. Include all paint products under one cover sheet.
 - 1. Interior concrete, vertical surfaces.
 - 2. Interior concrete, vertical surfaces (deep tone accent colors).
 - 3. Interior CMU.
 - 4. Interior CMU (deep tone accent colors).
 - 5. Interior steel.
 - 6. Interior steel (deep tone accent colors).
 - 7. Interior previously painted cabinet heater/fin tube enclosures.
 - 8. Interior steel piping, piping supports and hangers.
 - 9. Interior galvanized-metal.
 - 10. Interior galvanized-metal (metal deck).
 - 11. Interior galvanized metal (metal deck, deep tone accent colors).
 - 12. Interior aluminum (where indicated).
 - 13. Interior wood.

14. Interior wood (deep tone accent colors).
15. Interior plaster.
16. Interior plaster (deep tone accent colors).
17. Interior gypsum board.
18. Interior gypsum board (deep tone accent colors).
19. Interior insulation-covering.
20. Interior insulation-covering (deep tone accent colors).
21. Interior stained wood (closed or open grain).
22. Interior stained wood (closed or open grain).
23. Interior clear finish wood (closed grain).
24. Interior clear finish wood (closed grain).

B. Samples for Verification and Initial Color Selection: For each type of finish system and in each color and gloss of finish indicated.

1. Submit Samples on rigid backing, 8 inches square.
 - a. For wood finishes, submit Samples on representative samples of actual wood substrates, 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 finish system and locations of application areas. Use same designations indicated on Drawings and in schedules.
2. VOC content. Tints and /or colorant shall add no additional VOC to final product. Provide 3rd party certification of VOC content.

D. Coatings Maintenance Manual:

1. Upon conclusion of the project, the contractor or paint manufacture/supplier shall furnish a coatings maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions. Touch up procedures and color samples of each color and finish used. All information contained in a self-bound 3 ring hole punched catalog.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For applicator.

1.6 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: 10 percent, but not less than 1 gal. of each material and color applied.
 - 2. Stains and Transparent Finishes: 10 percent, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual, experienced in applying finishes specified in this Section, who has successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; familiar with special requirements indicated; and with sufficient trained staff to apply manufacturer's products according to specified requirements.
- B. Mockups: Apply mockups of each finish system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Architect will select one surface to represent surfaces and conditions for application of each finish system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
 - 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.
 - 4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 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.

1.9 FIELD CONDITIONS

- A. Apply finishes only when temperature of surfaces to be coated and surrounding 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.
- D. Lighting: Do not install finishes until a lighting level of not less than 80 fc is provided on the surfaces to receive finishing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Benjamin Moore & Co.
 - 2. PPG Architectural Finishes, Inc.
 - 3. Sherwin-Williams Company (The).
- B. Submittals containing manufactures other than stated above, will require a product-by-product comparison for each type of paint. All Comparable equals are to be matched with corresponding Sherwin Williams specified products.
- C. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to products listed in Part 3 articles for the application indicated.

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.
 - 3. Provide products of same manufacturer for each coat in a finish system.
 - 4. "All-in-one" paint and primer products are not acceptable.
- B. VOC Compliance: All paint products shall meet New York requirements for Volatile Organic Compound (VOC) and Ozone Transport Commission (OTC) regulations, January 2005.

C. Colors: As selected by Architect from manufacturer's full range.

1. 35 percent of surface area will be painted with deep tones.

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.

1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 12 percent.
 - b. Masonry (Clay and CMU): 12 percent.
 - c. Wood: 15 percent.
 - d. Gypsum Board: 12 percent.
 - e. Plaster: 8 percent.

B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

C. Plaster Substrates: Verify that plaster is fully cured.

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. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

A. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be finished. 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.

B. Clean substrates of substances that could impair bond of finishes, 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 finish systems indicated.

- C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- D. Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions.
- E. 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 3, "Power Tool Cleaning."
 - 2. SSPC-SP 11, "Power Tool Cleaning to Bare Metal."
- F. 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.
- G. 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.
- H. Galvanized Metal/Galvanized Deck, Factory Primed Surface-Coordinate with approved paint manufacture on compatibility of paint finish coats to factory prime surface.
- I. Aluminum Substrates: Remove loose surface oxidation.
- J. Wood Substrates:
 - 1. Scrape and clean knots. Before applying primer apply coat of knot sealer recommended in writing by topcoat manufacturer for coating system indicated.
 - 2. Apply wood filler paste to open-grain woods to produce smooth, glasslike finish.
 - 3. Sand surfaces that will be exposed to view and dust off.
 - 4. Prime edges, ends, faces, undersides, and back sides of wood.
 - 5. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.
- L. Alteration Work: Comply with applicable surface preparation requirements specified and as recommended by finish materials manufacturer for existing surfaces to receive paint or other finishes, including cleaning, sanding, and roughening as required for proper adherence of new finish material.
 - 1. Existing Woodwork: Strip existing wood finish to bare wood using commercially available solvents compatible with finish. Use in strict accordance with manufacturer's printed instructions. After stripping operation is complete and surface is dry, sand surface with sandpaper, using random orbital sanding machine.

3.3 APPLICATION

- A. Apply finishes according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for finish 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 back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not apply paints over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.
- E. Alterations: Finish new surfaces adjacent to unaltered existing surfaces with finish of same type and surface texture as corresponding adjacent surfaces, unless otherwise indicated. Finish patched, damaged, or extended surfaces to match existing surfaces.
- F. 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.
 - h. Duct, equipment, pipe and insulation having cotton or canvas insulation covering or another paintable jacket material.
 - 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. Duct, equipment, and pipe insulation having cotton or canvas insulation covering or another paintable jacket material.
 - 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 will 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 coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
- C. Protect work of other trades against damage from finish operation. Correct damage by cleaning, repairing, replacing, and recoating, 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 surfaces.

3.6 INTERIOR PAINTING SCHEDULE

- A. Concrete Substrates, Vertical Surfaces:
- 1. First Coat:
 - a. Benjamin Moore & Co.; Moore's Acrylic Masonry Primer 066.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer (LX02W0050.)

2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.
- B. Concrete Substrates, Vertical Surfaces (Deep Tone Accent Colors):
1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Moore's Acrylic Masonry Primer 066.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer (LX02W0050.)
 2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); ProMar 200 Zero VOC S/G B31-2600.
- C. CMU Substrates:
1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec Masonry Int-Ext Hi-Build Block Filler 571.
 - b. PPG Paints: Speedhide Interior/Exterior Latex Block Filler 6-7.
 - c. Sherwin-Williams Company (The); PrepRite Block Filler B25W25
 2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.
- D. CMU Substrates (Deep Tone Accent Colors):
1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Super Spec Masonry Int-Ext Hi-Build Block Filler 571.
 - b. PPG Paints: Speedhide Interior/Exterior Latex Block Filler 6-7.
 - c. Sherwin-Williams Company (The); PrepRite Block Filler B25W25.

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
 - b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-20 DTM Acrylic Coating S/G (B66-W01151 Series) or Gloss (B66-W01051 Series).

E. Steel Substrates:

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
 - b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.
2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29, or Gloss HP28.
 - b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
 - c. Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT

F. Steel Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
 - b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.
2. Second and Third Coats (Semi-Gloss): Additional coats may be required.
 - a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29 or Gloss HP28.
 - b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
 - c. Sherwin-Williams Company (The); Sherwin-Williams Company (The); Pro Industrial™ Waterbased Alkyd Urethane Enamel Low-Gloss or Semi-Gloss; B53 Series at 1.4-1.7 DFT

G. Previously Painted Steel Cabinet Heaters/ Fin tube Enclosures- up to 250 degrees:

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P06.
 - b. PPG Paints; PPG Paints: Pitt Tech DTM Acrylic Metal Primer 90-712
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66A50.
2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; Super Spec HP Urethane Alkyd Gloss.
 - b. PPG Paints; PPG Paints Pitt Tech Plus DTM Acrylic Semi-Gloss 4216
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

H. Steel Piping, Piping Supports and Hangers:

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
 - b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66W1.
2. Second and Third Coats (Semi-Gloss):
 - a. Benjamin Moore & Co.; N539 Ultra Spec Interior Semi-Gloss.
 - b. PPG Paints: Speedhide Interior Latex Semi-Gloss 6-500.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

I. Galvanized-Metal Substrates:

1. First Coat:
 - a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
 - b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
 - c. Sherwin-Williams Company (The); Sherwin Williams Pro Industrial Pro Cryl Universal Primer B66-1310
2. Second and Third Coats:
 - a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29.
 - b. PPG Paints: Pitt-Tech Industrial DTM Acrylic Satin 90-474.
 - c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G (B66-W01151/B66-W01051).

J. Galvanized-Metal Substrates (Metal Deck):

1. First Coat:

- a. Benjamin Moore & Co.; Coronado Super Kote 5000 Dry Fall Latex Flat 105 or Semi-Gloss 112.
- b. PPG Paints: Speed Super Tech Latex Dry Fog Spray Paint 6-724XI.
- c. Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dry Fall Eggshell B42W200082.

2. Second and Third Coats:

- a. Benjamin Moore & Co.; Coronado Super Kote 5000 Dry Latex Semi-Gloss 112.
- b. PPG Paints: Speed Super Tech Latex Dry Fog Spray Paint 6-724XI.
- c. Sherwin-Williams Company (The); Pro Industrial Waterborne Acrylic Dry Fall Eggshell B42W0082.

K. Galvanized-Metal Substrates (Metal Deck, Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
- b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Primer Finish B66 Series.

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; Ultra Spec HP DTM Acrylic Semi-Gloss HP29 or Gloss HP28.
- b. PPG Paints: Pitt-Tech Interior /Exterior Satin DTM Industrial Enamel 90-474.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G or Gloss B66 Series.

L. Aluminum Substrates (Where indicated):

1. First Coat:

- a. Benjamin Moore & Co.; Super Spec HP Acrylic Metal Primer P04.
- b. PPG Paints: Pitt-Tech Interior/Exterior Industrial DTM Primer/Finish Enamel 90-712.
- c. Sherwin-Williams Company (The); DTM Acrylic Primer Finish B66W1.

2. Second and Third Coats (Eggshell):

- a. Benjamin Moore & Co.; Ultra Spec 500 Interior Eggshell N538.
- b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
- c. Sherwin-Williams Company (The); Pro Industrial DTM B66 Series.

M. Wood Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer N023.
- b. PPG Paints: Seal Grip Latex Primer/Finish 17-951.
- c. Sherwin-Williams Company (The); Premium Interior Wall and Wood Primer B28W8111.

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
- b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
- c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G B31 Series.

N. Wood Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex Primer N023.
- b. PPG Paints: Seal Grip Latex Primer/Finish 17-951.
- c. Sherwin-Williams Company (The); Premium Interior Wall and Wood Primer B28W8111.

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

- a. Benjamin Moore & Co.; Ultra Spec 500 Interior Semi-Gloss N539.
- b. PPG Paints: Speedhide Interior Semi-Gloss Latex 6-500.
- c. Sherwin-Williams Company (The); Pro Industrial DTM Acrylic Coating S/G or Gloss B66 Series.

O. Plaster Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Super Spec Int/Ext 100% Acrylic Masonry Sealer N066.
- b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
- c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.

2. Second and Third Coats (Eggshell):

- a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
- b. PPG Paints: Speedhide Zero Interior Latex Eggshell 6-4310.
- c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Egg Shell (B20-2600 Series.)

P. Plaster Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Fresh Start Primer 023.
 - b. PPG Paints: Perma-Crete Alkali-Resistant Primer 4-603.
 - c. Sherwin-Williams Company (The); Loxon Concrete & Masonry Primer LX02W0050.
2. Second and Third Coats (Eggshell): Additional coats may be required.
 - a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
 - b. PPG Paints: Speedhide Zero Interior Latex Eggshell 6-4310.
 - c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Egg Shell (B20-2600 Series.)

Q. Gypsum Board Substrates:

1. First Coat:
 - a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
 - b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28W02600.)
2. Second and Third Coats (Eggshell):
 - a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
 - b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Low Sheen (B20-Series.)

R. Gypsum Board Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.
 - a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
 - b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
 - c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28W02600.)
2. Second and Third Coats (Eggshell): Additional coats may be required.
 - a. Benjamin Moore & Co.; N538 Ultra Spec 500 Interior Eggshell.
 - b. PPG Paints: Speedhide Interior Latex Eggshell 6-411.
 - c. Sherwin-Williams Company (The); Pro Mar 200 0 VOC Interior Latex Low Sheen (B24-2600 Series).

S. Insulation-Covering Substrates:

1. First Coat:

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
- b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
- c. Sherwin-Williams Company (The); PrepRite® ProBlock® Interior-Exterior Latex Primer-Sealer at 1.4 DFT

2. Second and Third Coats (Semi-Gloss):

- a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
- b. PPG Paints: Speedhide Zero Interior Semi-Gloss Latex 6-4510.
- c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28W02600.)

T. Insulation-Covering Substrates (Deep Tone Accent Colors):

1. First Coat: Use tinted primer.

- a. Benjamin Moore & Co.; Fresh Start Multi-Purpose Latex N023.
- b. PPG Paints: Speedhide Interior Latex Primer/Sealer 6-2.
- c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex Primer (B28-2600).

2. Second and Third Coats (Semi-Gloss): Additional coats may be required.

- a. Benjamin Moore & Co.; N539 Ultra Spec 500 Interior Semi-Gloss.
- b. PPG Paints: Speedhide Zero Interior Semi-Gloss Latex 6-4510.
- c. Sherwin-Williams Company (The); Pro Mar 200 Zero VOC Interior Latex S/G (B31-2600 Series.)

3.7 INTERIOR WOOD-FINISH-SYSTEM SCHEDULE

A. Stained Wood (Closed or Open Grain):

1. First Coat:

- a. Benjamin Moore & Co.; Lenmar Interior Waterborne Stain.
- b. PPG Paints: Olympic Interior Low VOC Oil Stain 44500.
- c. Sherwin-Williams Company (The); Minwax Wood Finish 250 VOC Compliant Stain (7107 Series).

2. Second and Third Coats (Eggshell/Low Lustre):

- a. Benjamin Moore & Co.; Benwood Stays Clear Stain Acrylic Polyurethane N423.
- b. PPG Paints: Olympic Interior Satin Polyurethane 43886.
- c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945)

B. Stained Wood (Closed or Open Grain): Apply wood grain filler to open grain wood.

1. First Coat:

- a. Benjamin Moore & Co.; Lenmar Interior Waterborne Stain.
- b. PPG Paints: Olympic Interior Low VOC Oil Stain 44500.
- c. Sherwin-Williams Company (The); Minwax Wood Finish 250 VOC Compliant Stain (7107 Series)

2. Second and Third Coats (Semi-Gloss/High Gloss):

- a. Benjamin Moore & Co.; Benwood Stays Clear Semi-Gloss Acrylic Polyurethane N422.
- b. PPG Paints: Olympic Interior Semi-Gloss Satin Polyurethane 43886.
- c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Semi-Gloss (009919937) or Gloss (009919929)

C. Clear Finish Wood (Closed Grain):

1. First Coat:

- a. Benjamin Moore & Co.; Benwood Stays Clear Acrylic Polyurethane N423.
- b. PPG Paints: Olympic Interior Gloss Polyurethane 43886 (Quart size only-OTC).
- c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945).

2. Second and Third Coats (Satin/Low Lustre):

- a. Benjamin Moore & Co.; Benwood Stays Clear Satin Acrylic Polyurethane N423.
- b. PPG Paints: Olympic Interior Satin Polyurethane 43884 thinned (Quart size only – OTC).
- c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945).

D. Clear Finish Wood (Closed Grain):

1. First Coat:

- a. Benjamin Moore & Co.; Benwood Stays Clear Acrylic Polyurethane N422.
- b. PPG Paints: Olympic Interior Gloss Polyurethane 43884 thinned (Quart size only – OTC).
- c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Satin (009919945)

2. Second and Third Coats (Semi-Gloss/High Gloss):

- a. Benjamin Moore & Co.; Benwood Stays Clear Semi-Gloss Acrylic Polyurethane N422.
- b. PPG Paints: Olympic Interior Semi-Gloss Polyurethane 43884 (Quart size only – OTC).
- c. Sherwin-Williams Company (The); Minwax High Build Polyurethane Semi-gloss (009919945).

END OF SECTION 09 91 00

SECTION 09 96 00 – HIGH-PERFORMANCE COATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes surface preparation and application of high-performance coating systems, for the following:
 - 1. Exterior applications.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product for substrates indicated. Include preparation requirements and application instructions. Include all paint products under one cover sheet.
 - 1. Exterior steel.
 - 2. Exterior Steel – Gas Piping
 - 3. Exterior galvanized metal.
 - 4. Exterior wood.
 - 5. Exterior aluminum.
 - 6. Exterior urethane.
 - 7. Exterior CMU.
 - 8. Exterior Cement Board.
- B. Samples for Verification and Initial Selection: For each type of coating system and in each color and gloss of topcoat indicated.
 - 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.

D. Coatings Maintenance Manual:

1. Upon conclusion of the project, the contractor or paint manufacture/supplier shall furnish a coatings maintenance manual such as Sherwin Williams "Custodian Project Color and Product Information" report. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions. Touch up procedures and color samples of each color and finish used. All information contained in a self-bound 3 ring hole punched catalog.

1.5 QUALITY ASSURANCE

- A. Qualification Data: For applicator.

1.6 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. Coatings: 10 percent, but not less than 1 gal. of each material and color applied.

1.7 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm or individual, experienced in applying high performance coatings specified in this Section, who has successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; familiar with special requirements indicated; and with sufficient trained staff to apply manufacturer's products according to specified requirements.

- B. Mockups: Apply mockups of each coating system indicated to verify preliminary selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each coating system specified in Part 3.
 - a. Wall and Ceiling Surfaces: Provide samples of at least 100 sq. ft.
 - b. Other Items: Architect will designate items or areas required.
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.

4. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store materials 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.

1.9 FIELD CONDITIONS

- A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 50 and 95 deg F.
- B. Do not apply coatings 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 coatings in snow, rain, fog, or mist.
- D. Lighting: Do not install high-performance coatings until a lighting level of not less than 80 fc is provided on the surfaces to receive coating.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 1. Benjamin Moore & Co.
 2. Sherwin-Williams Company (The).
 3. Tnemec Inc.
- B. Submittals containing manufactures other than stated above, will require a product by product comparison for each type of paint. All Comparable equals are to be matched with corresponding Sherwin Williams's specified products.
- C. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include but are not limited to products listed in Part 3 articles for the application indicated.

2.2 HIGH PERFORMANCE COATINGS, GENERAL

- A. Material Compatibility:
 1. Provide materials for use within each coating 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 coating system, provide products recommended in writing by manufacturers of topcoat for use in coating system and on substrate indicated.
 3. Provide products of same manufacturer for each coat in a coating system.
 4. "All-in-one" paint and primer products are not acceptable.
- B. VOC Compliance: Provide exterior coating products complying with New York requirements for Volatile Organic Compound (VOC) and Ozone Transport Commission (OTC) regulations, January 2005.
- C. Colors: As selected by Architect from manufacturer's full range.

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.
1. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - a. Concrete: 12 percent.
 - b. Masonry (Clay and CMU): 12 percent.
 - c. Wood: 15 percent.
 - d. Gypsum Board: 12 percent.
 - e. Plaster: 8 percent.
- B. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.
- C. Plaster Substrates: Verify that plaster is fully cured.
- 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. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. 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.

- B. Clean substrates of substances that could impair bond of coatings, including dust, dirt, oil, grease, and incompatible paints and encapsulants.
 - 1. Remove incompatible primers and re-prime substrate with compatible primers or apply tie coat as required to produce coating systems indicated.
- C. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
- D. Concrete Floors: Prepare by diamond grinding, whip blasting, or mechanical shot blasting, as recommended by coating manufacturer.
- E. Masonry Substrates: Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of 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 6/NACE No. 3, "Commercial Blast Cleaning."
 - 2. SSPC-SP 10/NACE No. 2, "Near-White Blast Cleaning."
- 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 using bio-degradable detergent. Then abrasive blast with fine abrasive to produce clean, lightly etched surfaces that promote adhesion of subsequently applied coatings.
- I. Aluminum Substrates: Remove loose surface oxidation by scarification.
- J. Wood Substrates:
 - 1. Scrape and clean knots. Before applying primer apply coat of knot sealer recommended in writing by topcoat manufacturer for coating system indicated.
 - 2. Sand surfaces that will be exposed to view and dust off.
 - 3. Prime edges, ends, faces, undersides, and back sides of wood.
 - 4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
- K. Galvanized Metal/Galvanized Deck- Factory Primed Surface: Coordinate with approved paint manufacturer on compatibility of paint finish coats to factory prime surface.
- L. After removing all surface contamination, the surface should be scuff sanded or scrubbed with an abrasive cleaner to dull the surface for best adhesion.

3.3 APPLICATION

- A. Apply high-performance coatings according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for coating and substrate indicated.
 - 2. Coat surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, coat surfaces behind permanently fixed equipment or furniture with prime coat only.
 - 3. Coat back sides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
 - 4. Do not apply coatings over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
- B. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of the same material are to be applied. Tint undercoats to match color of finish coat but provide sufficient difference in shade of undercoats to distinguish each separate coat.
- C. If undercoats or other conditions show through final coat, apply additional coats until cured film has a uniform coating finish, color, and appearance.
- D. Apply coatings to produce surface films without cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections. Produce sharp glass lines and color breaks.

3.4 FIELD QUALITY CONTROL

- A. Dry Film Thickness Testing: Owner will engage the services of a qualified testing and inspecting agency to inspect and test coatings for dry film thickness.
 - 1. Contractor shall touch up and restore coated surfaces damaged by testing.
 - 2. If test results show that dry film thickness of applied coating does not comply with coating manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with coating 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 coating application, clean spattered surfaces. Remove spattered coatings by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

- C. Protect work of other trades against damage from coating operation. Correct damage by cleaning, repairing, replacing, and recoating, 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 coated surfaces.

3.6 EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE

A. Steel Substrates:

1. First Coat:

- a. Benjamin Moore & Co. (No Zinc primers) suggest Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT.
- b. Sherwin-Williams Company (The); Corothane 1 Gal-Va-Pac Zinc Primer B65G00010 at 3.0-4.0 mils DFT.
- c. Tnemec Inc.; Series 90-97 Tneme-Zinc at 2.5 to 3.5 mils DFT.

2. Second Coat:

- a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.

3. Third Coat:

- a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 mils DFT
- b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT
- c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0 to 5.0 mils DFT.

B. Steel Substrates: Black Steel Gas Piping – above ground.

1. First Coat:

- a. Benjamin Moore & Co. Corotech V160 Surface Tolerant Epoxy Mastic (4.6–7.2).
- b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure, (5.0-10.0) DFT.
- c. Tnemec Inc.; Series V69F Hi-Build Epoxoline II (6.0-10.0) DFT

2. Second Coat:

- a. Benjamin Moore & Co. Ben; Corotech V160 Surface Tolerant Epoxy Mastic (4.6–7.2).
- b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure, (5.0-10.0) DFT.
- c. Tnemec Inc.; Series V69F Hi-Build Epoxoline II (6.0-10.0) DFT

3. Third Coat:
 - a. Benjamin Moore & Co. Ben; Corotech V510 Semigloss (or V500 Gloss) Aliphatic Urethane (2.0-2.8).
 - b. Sherwin-Williams Company (The); Hi-Solid Polyurethane 250, Aliphatic Polyurethane, (3.0-5.0) DFT.
 - c. Tnemec Inc.; Series 1095 Endura-Shield (2.5-3.5) DFT
- C. Steel Substrates: Black Steel Gas Piping – Below ground.
1. First Coat:
 - a. Benjamin Moore & Co. Corotech V157 Coal Tar Epoxy (8.3 -16.1).
 - b. Sherwin-Williams Company (The); PipeClad, Exterior Pipeline Epoxy, (25.0-60.0) DFT.
 - c. Tnemec Inc.; Series 46H-413 Hi-Build Tnemec -Tar (18.0-20.0) DFT
 2. Second Coat:
 - a. Benjamin Moore & Co. Ben; Not Required
 - b. Sherwin-Williams Company (The); Not Required
 - c. Tnemec Inc.; Series 46H-413 Hi-Build Tnemec -Tar (18.0-20.0) DFT
- D. Galvanized-Metal Substrates:
1. First Coat:
 - a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT
 - b. Sherwin-Williams Company (The); Macropoxy 646 B58 series 7.0-5.0 mils DFT
 - c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 3.0 to 5.0 mils DFT.
 2. Second Coat:
 - a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 DFT
 - b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT
 - c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0 to 5.0 mils DFT.
- E. Wood Substrates:
1. First Coat:
 - a. Benjamin Moore & Co. Insul-X Aqua Lock Plus Primer
 - b. Sherwin-Williams Company (The); Exterior Oil-Based Wood Primer Y24W8020 at 2.3 mils DFT
 - c. Tnemec Inc.; Series V10-99W Primer

2. Second and Third Coat:

- a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same)
- b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-4.0 mils DFT.
- c. Tnemec Inc.; Series 1029 Enduratone

F. Aluminum Substrates:

1. First Coat:

- a. Benjamin Moore & Co. Corotech V160 Epoxy Mastic Coating @4.6-7.2 DFT
- b. Sherwin-Williams Company (The); Macropoxy 646 Fast Cure Epoxy B58W610 at 5.0-10.0 mils DFT
- c. Tnemec Inc.; Series 66HS Hi-Build Epoxoline at 4.0-6.0 mils DFT

2. Second Coat:

- a. Benjamin Moore & Co. Corotech V500 Acrylic Aliphatic Urethane Coating Gloss or V510 Acrylic Aliphatic Urethane Coating Semi-Gloss at 3.2-4.6 DFT
- b. Sherwin-Williams Company (The); Hi Solids Polyurethane B65 series 4.5-3.0 mils DFT
- c. Tnemec Inc.; Series 1074 or 1095 Endura-Shield II at 2.0-5.0 mils DFT

G. Urethane Substrates:

1. First Coat:

- a. Benjamin Moore & Co. Insl-X Stix XSA 110 Bonding Primer
- b. Sherwin-Williams Company (The); Multi-Purpose Interior/Exterior Latex Primer/Sealer B51-450 Series at 1.4 mils DFT.
- c. Tnemec Inc.; Series 151-1051 Elasto-Grip F.C. at 1.0 to 2.0 mils DFT.

2. Second and Third Coat:

- a. Benjamin Moore & Co. Corotech V331 Acrylic DTM Enamel Semi-Gloss at 2-2.2 DFT (third coat of same)
- b. Sherwin-Williams Company (The); Sher-Cryl HPA High Performance Acrylic Semi-Gloss B66W350 at 2.5-4.0 mils DFT.
- c. Tnemec Inc.; Series 1029 Enduratone.

H. CMU:

1. First Coat:

- a. Benjamin Moore & Co. Ultra-Spec Masonry 100% Acrylic Masonry 608 Flat @9. DFT
- b. Sherwin-Williams Company (The) Con-Flex XL High Build Coating A05W451 at 6.0-7.5 mils DFT.

- c. Tnemec Inc.; Series 156 Color Enviro-Crete @4.0-8.0 mils DFT (use Tnemec-Tape for cracks larger than 1/64" wide)
 - 2. Second Coat:
 - a. Benjamin Moore & Co. Super Spec Masonry 100% Acrylic Elastomeric 360.
 - b. Sherwin-Williams Company (The); Con-Flex XL High Build Coating A05W451 at 6.0-7.5 mils DFT.
 - c. Tnemec Inc.; Series 156 Color Enviro-Crete @4.0-8.0 mils DFT
- I. Cement Siding:
- 1. First Coat:
 - a. Benjamin Moore & Co. Ultra-Spec Int/Ext Acrylic Masonry 609 -Series, (1.0-4.3) DFT.
 - b. Sherwin-Williams Company (The) Loxon Concrete & Masonry Primer, LX 02W0050, (2.1-3.2 mils) DFT.
 - c. Tnemec Inc.; Series 27WB Low VOC Water Base Epoxy (6.0 – 12.0 mils) DFT.
 - 2. Second Coat:
 - a. Benjamin Moore & Co. Ben Acrylic Exterior, 541/542/543 Series, (1.3 mils) DFT.
 - b. Sherwin-Williams Company (The); Resilience Acrylic Exterior, K43 Series, (1.6 mils) DFT.
 - c. Tnemec Inc.; Series 1029 HDP Acrylic Water Based Polymer, (2.5 mils) DFT

3.7 INTERIOR AND EXTERIOR HIGH-PERFORMANCE COATING SCHEDULE:

- A. Interiors/Exterior Gas Piping: color to be "Safety yellow"
 - 1. First Coat:
 - a. Benjamin Moore & Co.; Corotech Acrylic Enamel -Gloss
 - b. Sherwin-Williams Company (The); Kem Bond Alkyd HS Primer.
 - c. Tnemec Inc.; Tnemec-Liner series 61 at 8-12 mils DFT.
 - 2. Second Coat:
 - a. Benjamin Moore & Co.; Corotech Acrylic Enamel -Gloss
 - b. Sherwin-Williams Company (The); Pro Urethane Alkyd Enamel at 6-8.0 mils total DFT.
 - c. Tnemec Inc.; Tnemec-Liner series 61 at 8-12 mils DFT.

END OF SECTION 09 96 00

SECTION 10 11 00 - VISUAL DISPLAY SURFACES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Markerboards.

1.3 DEFINITIONS

- A. Visual Display Board Assembly: Visual display surface that is factory fabricated into composite panel form, either with or without a perimeter frame; includes chalkboards, markerboards, and tackboards.
- B. Visual Display Surface: Surfaces that are used to convey information visually, including surfaces of chalkboards, markerboards, tackboards, and surfacing materials that are not fabricated into composite panel form but are applied directly to walls.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for visual display surfaces. Include rated capacities individual panel weights for sliding visual display units.
 - 1. Porcelain-enamel markerboards.
 - 2. Visual display rails.
 - 3. Chalktray.
 - 4. Display rail.
 - 5. End stops.
 - 6. Map hooks.
 - 7. Map hooks and clips.
 - 8. Flag holder.

- B. Shop Drawings: For visual display surfaces. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Show locations of special-purpose graphics for visual display surfaces.
 - 2. Include sections of typical trim members.
- C. Samples for Verification and Initial Color Selection: For each type of visual display surface indicated, for units with factory-applied color finishes, and as follows:
 - 1. Actual sections of porcelain-enamel face sheet tackboard assembly visual display wall panel display rail.
 - 2. Include accessory Samples to verify color selected.
 - 3. Visual Display Surface: Not less than 8-1/2 by 11 inches, mounted on substrate indicated for final Work. Include one panel for each type, color, and texture required.
 - 4. Trim: 6-inch-long sections of each trim profile.
 - 5. Display Rail: 6-inch-long sections.
 - 6. Modular Support System: 6-inch-long sections.
 - 7. Accessories: Full-size Sample of each type of accessory.
- D. Warranties: Sample of special warranties.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for surface-burning characteristics of fabrics.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For visual display surfaces and power-operated units to include in maintenance manuals.
- B. Warranties: Executed special warranties.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of motor-operated, sliding visual display units required for this Project.
- B. Source Limitations: Obtain visual display surfaces from single source from single manufacturer.
- C. Surface-Burning Characteristics: As determined by testing identical products according to ASTM E 84 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver factory-built visual display surfaces, including factory-applied trim where indicated, completely assembled in one piece without joints, where possible. If dimensions exceed maximum manufactured panel size, provide two or more pieces of equal length as acceptable to Architect. When overall dimensions require delivery in separate units, prefit components at the factory, disassemble for delivery, and make final joints at the site.
- B. Store visual display surfaces vertically with packing materials between each unit.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install visual display surfaces 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 occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with visual display surfaces by field measurements before fabrication.
 - 1. Allow for trimming and fitting where taking field measurements before fabrication might delay the Work.

1.11 WARRANTY

- A. Special Warranty for Porcelain-Enamel Face Sheets: Manufacturer's standard form in which manufacturer agrees to repair or replace porcelain-enamel face sheets that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Surfaces lose original writing and erasing qualities.
 - b. Surfaces exhibit crazing, cracking, or flaking.
 - 2. Warranty Period: Life of the building.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Porcelain-Enamel Face Sheet: Manufacturer's standard steel sheet with porcelain-enamel coating fused to steel; uncoated thickness indicated.
 - 1. Manufacturers: For convenience specifications and details are based on Claridge Products and Equipments, Inc. Harrison Arkansas, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

- a. PolyVision Corporation; a Steelcase company.
 - b. Best-Rite Manufacturing.
- 2. Matte Finish: Low reflective; chalk wipes clean with dry cloth or standard eraser.
- 3. Gloss Finish: Gloss as indicated; dry-erase markers wipe clean with dry cloth or standard eraser.
- B. Hardboard: ANSI A135.4, tempered.
- C. Particleboard: ANSI A208.1, Grade M-1.
- D. Fiberboard: ASTM C 208.
- E. Extruded Aluminum: ASTM B 221, Alloy 6063.
- F. Adhesives: Manufacturer's standard product that complies with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

2.2 MARKERBOARD ASSEMBLIES

- A. Porcelain-Enamel Markerboards: Balanced, high-pressure, factory-laminated markerboard assembly of three-ply construction consisting of backing sheet, core material, and 0.021-inch-thick, porcelain-enamel face sheet with high low gloss finish.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc, Similar to "Vitracite Porcelain Enamel Steel Chalkboards" or comparable product by one of the following:
 - a. Best-Rite Manufacturing.
 - b. PolyVision Corporation; a Steelcase company, 500 Stationary series.
 - 2. Particleboard Core: 3/8 inch thick; with 0.015-inch-thick, aluminum sheet backing.
 - 3. Face Sheet: Min. 24-gauge steel with porcelain enamel finish suitable for use with liquid chalk markers similar to "LCS Liquid Chalk Writing System" by Claridge Products and Equipment Inc
 - 4. Laminating Adhesive: Manufacturer's standard, moisture-resistant thermoplastic type.
 - 5. Board units are to be magnetic.

2.3 BOARD UNIT ACCESSORIES

- A. Aluminum Frames and Trim: Fabricated from not less than 0.062-inch-thick, extruded aluminum; of size and shape indicated on Drawings.
 - 1. Factory-Applied Trim: Manufacturer's standard.

B. Chalktray: Manufacturer's standard, continuous.

1. Solid Type: Extruded aluminum with ribbed section with screw on chalk trough end enclosures.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; "No. 262 Chalk Trough".

C. Map Rail: Provide the following accessories:

1. Integral Display Rail: Continuous and integral with map rail; fabricated from cork approximately 2 inches wide.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; Hang Tight Rail System".
2. End Stops: Located at each end of map rail.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; No. 74ES".
3. Map Hooks: Two map hooks for every 48 inches of map rail or fraction thereof.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; No. 76M Spring Clip Map Hook".
4. Flag Holder: One for each room.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Claridge Products and Equipment, Inc.; No.76FH Flag Holders".

2.4 FABRICATION

- A. Porcelain-Enamel Visual Display Assemblies: Laminate porcelain-enamel face sheet and backing sheet to core material under heat and pressure with manufacturer's standard flexible, waterproof adhesive.
- B. Aluminum Frames and Trim: Fabricate units straight and of single lengths, keeping joints to a minimum. Miter corners to a neat, hairline closure.
 1. Where factory-applied trim is indicated, trim shall be assembled and attached to visual display units at manufacturer's factory before shipment.

2.5 GENERAL FINISH REQUIREMENTS

- 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.

2.6 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, AA-M12C22A31, Class II, 0.010 mm or thicker.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, surface conditions of wall, and other conditions affecting performance of the Work.
- B. Examine roughing-in for electrical power systems to verify actual locations of connections before installation of motor-operated, sliding visual display units.
- C. Examine walls and partitions for proper preparation and backing for visual display surfaces.
- D. Examine walls and partitions for suitable framing depth where sliding visual display units will be installed.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.
- F. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Comply with manufacturer's written instructions for surface preparation.
- B. Clean substrates of substances that could impair the performance of and affect the smooth, finished surfaces of visual display boards, including dirt, mold, and mildew.
- C. Prepare surfaces to achieve a smooth, dry, clean surface free of flaking, unsound coatings, cracks, defects, projections, depressions, and substances that will impair bond between visual display surfaces and wall surfaces.
 - 1. Prime wall surfaces indicated to receive direct-applied, visual display tack wall panels and as recommended in writing by primer/sealer manufacturer and wall covering manufacturer.
- D. Prepare recesses for sliding visual display units as required by type and size of unit.

3.3 INSTALLATION, GENERAL

- A. General: Install visual display surfaces in locations and at mounting heights indicated on Drawings. Keep perimeter lines straight, level, and plumb. Provide grounds, clips, backing materials, adhesives, brackets, anchors, trim, and accessories necessary for complete installation.

3.4 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY BOARDS AND ASSEMBLIES

- A. Visual Display Boards: Attach concealed clips, hangers, and grounds to wall surfaces and to visual display boards with fasteners at not more than 16 inches o.c. Secure both top and bottom of boards to walls.
 - 1. Field-Applied Aluminum Trim: Attach trim over edges of visual display boards and conceal grounds and clips. Attach trim to boards with fasteners at not more than 24 inches o.c.
 - a. Attach chalktrays to boards with fasteners at not more than 12 inches o.c.

3.5 INSTALLATION OF VISUAL DISPLAY RAILS

- A. Display Rails: Install rails in locations and at mounting heights indicated on Drawings. Attach to wall surface with fasteners at not more than 16 inches o.c.

3.6 INSTALLATION OF MODULAR SUPPORT SYSTEM

- A. Modular Support System: Install adjustable standards in locations and at mounting heights indicated on Drawings. Install standards at 48 inches o.c., vertically aligned and plumb, and attached to wall surface with fasteners at 12 inches o.c.
 - 1. Install single-slotted standard at each end of each run of standards and double-slotted standards at intermediate locations.
 - 2. Provide locking screw at top corner of visual display board at each standard.
 - 3. Hang visual display units on modular support system.

3.7 INSTALLATION OF FACTORY-FABRICATED VISUAL DISPLAY UNITS

- A. Sliding Visual Display Units: Install units in recessed locations and at mounting heights indicated. Attach to wall framing with fasteners at not more than 16 inches o.c.
 - 1. Adjust panels to operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

3.8 CLEANING AND PROTECTION

- A. Clean visual display surfaces according to manufacturer's written instructions. Attach one cleaning label to visual display surface in each room.
- B. Touch up factory-applied finishes to restore damaged or soiled areas.
- C. Cover and protect visual display surfaces after installation and cleaning.

3.9 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated, sliding visual display units.

END OF SECTION 10 11 00

SECTION 10 14 00 - SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Interior unframed signs.
- B. Scope: Provide room identification signs at all permanent rooms. Room identification signs to contain room names, room numbers, and graphics as indicated on Drawings and in Signage Schedule attached to this Section. Provide other signs as indicated on Drawings and in Signage Schedule attached to this Section.
 - 1. Provide barrier-free and tactile signage at all locations required by Code and as indicated on Drawings.

1.3 DEFINITIONS

- A. Accessible: In accordance with the accessibility standard.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner and signage Installer.
 - 2. Review requirements for signage including, but not limited to, the following:
 - a. Size, configuration, and location of each sign.
 - b. Text, room name, room number, and graphics selections.
 - c. Color selections.
 - d. Sign Samples.
 - e. Sign quantities.
 - 3. Review requirements for accessible signage.
 - 4. Review requirements for mounting locations, heights, and types.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for signs.
 - 1. Interior unframed signs.
- B. Shop Drawings: For 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.
 - 4. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
- 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), and as follows:
 - 1. Signs: Full-size Sample of interior unframed sign.
- E. Product Schedule: For signs. Use same designations indicated on Drawings or specified.
- F. Sample Warranty: For special warranty.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.
- B. Warranty: Executed special warranty.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.10 WARRANTY

- A. Special Warranty: Manufacturer agrees to correct 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", ICC A117.1, and building Code in effect for Project.
- B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 200 or less.
 - 2. Smoke-Developed Index: 450 or less.

2.2 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, unless otherwise indicated, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - 1. ASI Sign Systems, Inc., dba ASI.
 - 2. Best Sign Systems, Inc.
 - 3. Mohawk Sign Systems.
- B. Source Limitations: Obtain signs from single source from single manufacturer.

2.3 INTERIOR UNFRAMED SIGNS

- A. Interior Unframed Sign: Sign with smooth, uniform surfaces; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; for interior use, and as follows:
1. Basis-of-Design Product: Subject to compliance with requirements, provide ASI; EmBoss ADA-Ready Sign System, or comparable product.
 2. Sign Materials:
 - a. Mounting Panel: 0.125-inch-thick acrylic.
 - b. Face: 0.0015-inch-thick PVC/vinyl acetate bonded to mounting panel.
 3. Fabrication:
 - a. Graphics and Text: Accessible tactile copy and Grade 2 Braille (except as otherwise indicated). Color as selected by Architect from manufacturer's full range. Finish raised characters to contrast with background color, and finish Braille to match background color.
 - 1) Where "(#)" appears in Sign Type paragraph below, verify with Architect number to be used in place of "(#)".
 - 2) Where "(room name)" appears in Sign Type paragraph below, verify with Architect room name to be used in place of "(room name)".
 - b. Typeface: As selected by Architect from manufacturer's full range.
 - c. Background: Finish and color as selected by Architect from manufacturer's full range.
 4. Mounting: Manufacturer's standard method for substrates indicated, Surface mounted to wall with adhesive and two-face tape.
- B. Sign Types:
1. Type 1: Occupancy Load Sign:
 - a. Size: 3'-8" wide by 1'-2" high.
 - b. Text Size, Color, and Content:
 - 1) 3-inch-high, 3/4-inch stroke, red lettering: MAXIMUM OCCUPANCY.
 - 2) 2-inch-high, 1/2-inch stroke, red lettering: NOT TO EXCEED.
 - 3) 3-inch-high, 3/4-inch stroke, red lettering: (#) PERSONS.
 - c. Field Color: White.
 - d. Provide in locations indicated and in compliance with requirements of authorities having jurisdiction.

- 2. Type 5: Room Name/Number Sign:
 - a. Size: 6 inches by 6 inches.
 - b. Text Size, Font Style, and Content:
 - 1) 1-inch-high (minimum) sans serif lettering: (#).
 - 2) 5/8-inch-high (minimum) sans serif lettering: (room name).
 - c. Arrangement: Two lines where needed.

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signs, noncorrosive and compatible with each material joined, and complying with the following:
 - 1. Furnish stainless-steel devices unless otherwise indicated.
 - 2. Exposed Metal-Fastener Components, General:
 - 3. Sign Mounting Fasteners:
 - a. Through Fasteners: Exposed metal fasteners matching sign finish, with type of head indicated, and installed in predrilled holes.
- B. Adhesive: As recommended by sign manufacturer.
 - 1. Verify adhesives have a VOC content of 70 g/L or less.
- C. 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. Drill and tap for required fasteners. Use exposed fasteners that match sign finish.
- B. Tactile and Braille Characters: In compliance with listed accessibility standard in "Performance Requirements" Article, raised 1/32-inch minimum above background.

2.6 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 and other conditions affecting performance of the Work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Verify that anchorage devices embedded in permanent construction are correctly sized and located to accommodate signs.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.
- E. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 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 as indicated on Drawings and according to the accessibility standard.
- C. Mounting Locations: Locate on wall adjacent to latch side of door 60 inches from center of sign to finished floor, and 2 inches from edge of door frame. Where adequate wall space adjacent to latch side of door is not available, and at double-leaf doors, place sign on nearest adjacent wall.
- D. 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.

3.3 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 corrected by finish touchup or similar minor corrective procedures.
- B. Remove temporary protective coverings and strippable films as signs are installed.
- 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.

Attachment: Signage Schedule

END OF SECTION 10 14 00

COLOR	ROOM NO.	SIGNAGE TYPE	SIGNAGE TEXT	REMARKS
			Walter Panas High School	
	320	5/1	Name by District	Type at all doors
	320A	5	Name by District	Type at all doors
	320B	5	Name by District	
	320C	5	Name by District	
	320D	5	Name by District	
	320E	5	Name by District	
	320F	5	Name by District	
	320H	5	Name by District	
	600A	5	Name by District	
	600	5	Name by District	
	602	5	Name by District	
			Lakeland High School	
	117	5/1	Name by District	Type at all doors
	117A	5	Name by District	Type at all doors
	117B	5	Name by District	
	117C	5	Name by District	
	117D	5	Name by District	Type at all doors
	117E	5	Name by District	Type at all doors
	117F	5	Name by District	
	117G	5	Name by District	
	117H	5	Name by District	
	120	5	Name by District	
	121	5	Name by District	Type at all doors
			Lakeland Copper Beech Middle School	
	338	5	Name by District	
	338A	5	Name by District	
	339	5	Name by District	
	339B	5	Name by District	
	201	5	Name by District	Type at all doors
	100	5	Name by District	Type at all doors
	103	5	Name by District	Type at all doors
	205	5	Name by District	Type at all doors
	207	5	Name by District	Type at all doors
	113	5	Name by District	
	304	5/1	Name by District	Type at all doors
	304A		Name by District	

	304B		Name by District	
	304C		Name by District	
	304E		Name by District	
	304F		Name by District	
	306		Name by District	Type at all doors
	C301		Name by District	
	C300		Name by District	

PLEASE REFER TO PARAGRAPH 1.4 – PREINSTALLATION MEETINGS IN REGARD TO SIGNAGE REQUIREMENTS.

SECTION 10 14 19 - DIMENSIONAL LETTER SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Cutout dimensional characters.
 - 2. Illuminated Reverse Channel Letters

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For dimensional letter 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 others, and accessories.
 - 3. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
 - 4. Illuminated Letter- show sign mounting layouts, profiles and product components including dimensions, anchorage, electrical connections, and accessories.
- C. Samples for Verification and Initial Color Selection: For each type of sign assembly, exposed component, and exposed finish.
 - 1. Include representative Samples of available typestyles and graphic symbols.
 - 2. Dimensional Characters: Full-size Sample of each type of dimensional character.
 - 3. Illuminated Letters- Full-size samples of each type of illuminated letter.
- D. Sign Schedule: Use same designations specified or indicated on Drawings or in a sign schedule.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs 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.
- B. UL listed- all electrical work on this sign to be UL listed.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify locations by field measurements before fabrication and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Thermal Movements: For exterior fabricated channel dimensional characters, allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 DIMENSIONAL CHARACTERS

- A. Cutout Characters, Copper Beach: Characters with uniform faces; square-cut, smooth edges; precisely formed lines and profiles; and as follows:
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide ASI Sign Systems, Inc.; LPS Series or comparable product by one of the following:
 - a. ACE Sign Systems, Inc.
 - b. Gemini Incorporated.
 - c. Metallic Arts.
 - 2. Character Material: Sheet or plate aluminum.
 - 3. Character Height: As indicated.
 - 4. Thickness: 1/4".
 - 5. Finishes: Aluminum.
 - a. Integral Metal Finish: As selected by Architect from full range of industry finishes.
 - b. Overcoat: Manufacturer's standard baked-on clear coating.

6. Mounting: Projecting studs.
7. Typeface: "Copperplate".

2.3 DIMENSIONAL CHARACTER MATERIALS

- A. Aluminum Castings: ASTM B 26/B 26M, alloy and temper recommended by sign manufacturer for casting process used and for type of use and finish indicated.
- B. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

2.4 ACCESSORIES

- A. Sign Mounting Fasteners:
 1. Projecting Studs: Threaded studs with sleeve spacer, welded or brazed to back of sign material, screwed into back of sign assembly, or screwed into tapped lugs cast integrally into back of cast sign material, unless otherwise indicated.

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. Comply with AWS for recommended practices in welding and brazing. Provide welds and brazes behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed connections of flux, and dress exposed and contact surfaces.
 4. Conceal connections if possible; otherwise, locate connections where they are inconspicuous.
 5. Internally brace signs for stability and for securing fasteners.
 6. Provide rebates, lugs, and brackets 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.
 7. Castings: Fabricate castings free of warp, cracks, blowholes, pits, scale, sand holes, and other defects that impair appearance or strength. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks before finishing.

2.6 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.
- C. Directional Finishes: Run grain with long dimension of each piece and perpendicular to long dimension of finished trim or border surface unless otherwise indicated.
- D. Organic, Anodic, and Chemically Produced Finishes: Apply to formed metal after fabrication but before applying contrasting polished finishes on raised features unless otherwise indicated.

2.7 ALUMINUM FINISHES

- A. Clear Anodic Finish: AAMA 611, Class I, 0.018 mm or thicker.

2.8 STAINLESS-STEEL FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
 - 2. Directional Satin Finish: No. 4.
 - 3. Mirrorlike Reflective, Nondirectional Polish: No. 8.

2.9 ILLUMINATED REVERSE CHANNEL LETTERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide ASI Sign Systems, Inc.; Illuminated Reverse Channel Fabricated Metal Dimensional Letters” or comparable product by one of the following:
 - 1. ACE Sign Systems, Inc.
 - 2. Gemini Incorporated.
- B. Character Material/Finishes: Aluminum with Acrylic polyurethane paint finish Sheet or Brushed satin aluminum finish with clear coat- Faces: .090 Returns: .063 insides of letters painted white for increased reflectivity. ¼ “clear polycarbonate backs and standoffs per manufacturer standards.
- C. Character Height: As indicated.
- D. Thickness: Manufacturer's standard for size of character.
- E. LEDs: Bright White.

- F. Electrical: 12 volt DC power supply with Class 2 outputs. Operating temperatures between -40 degree to 60 degree C UL, cUL and CSA certified. Number of power supplies to be determined by manufacturer. LED modules to attach to inside letter cabinets (facing out/wall) and wiring per manufacturers standards.
- G. Mounting: Methods: Studs and spacers to building as recommended by sign fabricator. Individual letter wiring to be pulled through to interior and all wiring between letters and transformers to be made by sign installers. Final electrical connections to be done by others.
- H. Typeface: Copperplate.

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 signage work.
- B. Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.
- D. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 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. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
 - 3. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- B. Mounting Methods:
 - 1. Projecting Studs: Using a template, drill holes in substrate aligning with studs on back of sign. Remove loose debris from hole and substrate surface.

- a. Masonry Substrates: Fill holes with adhesive. Leave recess space in hole for displaced adhesive. Place spacers on studs, place sign in position, and push until spacers are pinched between sign and substrate, embedding the stud ends in holes. Temporarily support sign in position until adhesive fully sets.
- b. Thin or Hollow Surfaces: Place spacers on studs, place sign in position with spacers pinched between sign and substrate and install washers and nuts on stud ends projecting through opposite side of surface and tighten.

3.3 ADJUSTING AND CLEANING

- A. Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters 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.
- 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 19

SECTION 10 14 53 - TRAFFIC SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Traffic signs. Related Sections:
 - 1. Section 03 30 00 "Cast-In-Place Concrete"

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Traffic signs.
 - 2. Traffic sign posts.
- B. Shop Drawings: For traffic signage.
 - 1. Include fabrication and installation details and attachments to other work.
 - 2. Show sign mounting heights and accessories.
 - 3. Show message list, typestyles, graphic elements, 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.
 - 2. Include color samples.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For signs to include in maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Comply with all applicable state and local requirements for traffic signs, including (but not limited to) reflectivity, foundation construction, and wind resistance.
 - 1. Comply with U.S. Department of Transportation's Manual on Uniform Traffic Control Devices (MUTCD), AASHTO M268 and NYSDOT standard specifications and regulations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard:
 - 1. Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines for Buildings and Facilities, ICC A117.1, and building code in effect for Project for signs.
 - 2. Comply with applicable provisions in the New York State Department of State Division of Administrative Rules, Part 300 Universal Symbol of Access, Part 300.4 Accessible Wording, Part 300.5 Accessible Symbol, Part 300.6 Accessibility Graphic and Components, and building code in effect for Project for signs.

2.2 TRAFFIC SIGNS

- A. Traffic Sign: Sign of single-panel configuration; with smooth, uniform surfaces and support assembly; with message and characters having uniform faces, sharp corners, and precisely formed lines and profiles; and as follows:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product.
 - 1. Allstate Sign & Plaque Corporation; Aluminum Traffic & Parking Signs.
- C. Materials:
 - 1. Solid-Sheet Sign Panels: Aluminum sheet and as follows:
 - a. Thickness: 0.080 inch.
 - b. Surface-Applied Graphics: Applied vinyl film.
 - 2. Posts: Steel.
 - a. Description: U-channel with breakaway base.
 - b. Installation Method: Direct burial driven.
 - 3. Text and Typeface: Typeface as selected by Architect from manufacturer's full range and content as scheduled.

4. Reflectivity:

- a. Traffic control, directional and guide signage: Provide high intensity prismatic reflective sheeting (Federal DOT Type III and IV Reflective).
- b. Parking and informational signage: Provide engineer grade prismatic reflective sheeting (Federal DOT Type 1 Reflective).

2.3 MATERIALS

- A. Aluminum Sheet and Plate: ASTM B 209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- B. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.
- C. Steel Materials:
 1. U-Channel posts: Powdercoated U-channel steel.
 - a. Strength: 3 lbs. per foot
 - b. Length: 8-ft minimum
 2. Galvanized Steel Pipe: Group IC, SS40, round steel electric-resistance-welded pipe.
 - a. Diameter: 3.000-inches
 - b. Steel Cap for Round Post: Galvanized steel with vandal-resistant secure fit to pipe.
 - c. Length: 8-ft minimum
 3. Steel Tubing: ASTM A 500, Grade B.
 4. Bolts for Steel Framing: ASTM A 307 or ASTM A 325 as necessary for design loads and connection details.
 5. For steel exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names, or roughness.
- 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 3,000 psi.

2.4 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of signage, noncorrosive and compatible with each material joined, and complying with the following:
 1. Furnish nonferrous-metal, stainless-steel, or hot-dip galvanized devices unless otherwise indicated.

2.5 FABRICATION

- A. General: Provide manufacturer's standard sign assemblies according to requirements indicated.
- B. Sign Message Panels: Construct sign-panel surfaces to be smooth and to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner.
 - 1. Increase panel thickness or reinforce with backing materials as needed to produce surfaces without distortion, buckles, warp, or other surface deformations.
- C. Post Fabrication: Fabricate posts designed to withstand wind pressure indicated for Project location and of lengths required for installation method indicated for each sign.
 - 1. Steel Posts: Fabricate from steel tubing unless otherwise indicated. Include post caps, reinforcement where required for loading conditions, and related accessories required for complete installation.
 - 2. Direct Burial: Fabricate posts 36 inches longer than height of sign to permit direct burial or embedment in concrete-filled postholes.

2.6 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.

2.7 METALLIC-COATED STEEL FINISHES

- A. Baked-Enamel or Powder-Coat Finish: Provide factory-applied 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. Galvanized Finish: Type B, zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.

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 signage work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install signs using installation methods indicated and according to manufacturer's written instructions.
 - 1. Install signs level, plumb, 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 accessibility standard.
 - 3. Before installation, verify that sign components are clean and free of materials or debris that would impair installation.

3.3 INSTALLING POSTS

- A. Vertical Tolerance: Set posts plumb within a tolerance of 1/16 inch in 3 feet.
- B. Direct-Burial Method:
 - 1. Excavation: Excavate posthole to dimensions indicated. Reconstruct subgrade that is not firm, undisturbed, or compacted soil, or that is damaged by freezing temperatures, frost, rain, accumulated water, or construction activities by excavating an additional 12 inches, backfilling with satisfactory soil or well-graded aggregate, and compacting to original subgrade elevation.
 - 2. Setting in Cast-in-Place Concrete: Set post in position, support to prevent movement, and place concrete in posthole as indicated.

3.4 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.
- 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 53

SECTION 10 22 39.13 - FOLDING GLASS-PANEL PARTITIONS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section includes manually operated, glass-panel partitions.

1.3 PREINSTALLATION MEETINGS

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

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals and informational submittals required by this Section concurrently.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For operable glass-panel partitions.
 - 1. Include plans, elevations, sections, details, and attachments to other work.
 - 2. Indicate stacking and operating clearances. Indicate location and installation requirements for hardware and track, blocking, and direction of travel.
- C. Samples: For each type of exposed material or finish.
 - 1. Include Samples of accessories involving color selection.
- D. Warranties: Sample of Project-specific warranties.

1.6 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:
 - 1. Partition track, track supports and bracing, turning space, and storage layout.

2. Suspended ceiling components.
 3. Structural members to which suspension systems are attached.
 4. Items penetrating finished ceiling, including, but not limited to, the following:
 - a. Lighting fixtures.
 - b. HVAC ductwork, outlets, and inlets.
 - c. Speakers.
 - d. Detectors.
 5. Plenum acoustical barriers.
- B. Setting Drawings: For embedded items and cutouts required in other work, including support-beam, mounting-hole template.
- C. Qualification Data: For qualified Installer.
- D. Seismic Qualification Certificates: For operable glass-panel partitions, tracks, accessories, and components, from manufacturer. Include seismic capacity of partition assemblies to remain in vertical position during a seismic event and the following:
1. Basis for Certification: Indicate whether certification is based on analysis, testing, or experience data, according to ASCE/SEI 7.
 2. Detailed description of partition anchorage devices on which the certification is based and their installation requirements.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For operable glass-panel partitions to include in maintenance manuals.
1. In addition to items specified in Section 01 78 23 "Operation and Maintenance Data," include the following:
 - a. Finishes for exposed trim and accessories. Include precautions for cleaning materials and methods that could be detrimental to finishes and performance.
 - b. Seals, hardware, track, carriers, and other operating components.
- B. Warranties: Executed special warranties.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.9 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of operable glass-panel partitions that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of operable glass-panel partitions.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal use.
 - 2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Operable glass-panel partitions shall withstand the effects of earthquake motions see design data on Structural Drawings.
 - 1. The term "withstand" means "the partition panels will remain in place without separation of any parts when subjected to the seismic forces specified."

2.2 OPERABLE GLASS PANELS

- A. Operable Glass Panels: Frameless glass-panel partition system, including panels, seals, suspension system, operators, and accessories.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Nana Wall Systems, Inc.; CSW75.
- B. Panel Operation: Manually operated, top-supported, continuously hinged aluminum and glass door panels.
- C. Panel Construction: As required to support panel from suspension components and with reinforcement for hardware attachment. Fabricate panels so finished in-place partition is rigid; level; plumb; aligned, with tight joints and uniform appearance; and free of bow, warp, twist, deformation, and surface and finish irregularities.
 - 1. Factory-Glazed Fabrication: Glaze operable glass panels in the factory where practical and possible for applications indicated. Comply with manufacturer's written instructions and with requirements in Section 08 80 00 "Glazing."
- D. Glass and Glazing: Glass type HCL-2, laminated glass with two plies of heat-strengthened float glass as specified in Section 08 80 00 "Glazing."

- E. Dimensions: Fabricate operable glass-panel partitions to form an assembled system of dimensions indicated and verified by field measurements.
 - 1. Panel Width: Equal Standard widths.
 - a. End Panel Width: per manufacturer's requirements
- F. Panel Rail Materials:
 - 1. Aluminum: Alloy and temper recommended by aluminum producer and finisher for type of use, corrosion resistance, and finish indicated; ASTM B 221 for extrusions; manufacturer's standard strengths and thicknesses for type of use.
- G. Panel Closure: Manufacturer's standard unless otherwise indicated.
- H. Hardware: Manufacturer's standard as required to operate operable glass-panel partition and accessories; with decorative, protective finish.
 - 1. Hinges: Manufacturer's standard.
- I. Panel Rail Finishes:
 - 1. Exposed Metal: As selected by Architect from manufacturer's full range as follows:
 - a. Aluminum: Baked powder coating.
 - b. Separate colors may be selected for each building.
- J. Head brush: Manufactures brush seal between top of panels and top track.

2.3 SUSPENSION SYSTEMS

- A. Tracks: Steel or aluminum mounted directly to overhead structural support, or with adjustable steel hanger rods for overhead support, as indicated, designed for operation, size, and weight of operable glass-panel partition indicated. Size track to support partition operation and storage without damage to suspension system, operable glass-panel partitions, or adjacent construction. Limit track deflection to no more than 0.10 inch between bracket supports. Provide a continuous system of track sections and accessories to accommodate configuration and layout indicated for partition operation and storage.
 - 1. Panel Guide: Aluminum guide on both sides of the track to facilitate straightening of the panels; finished with factory-applied, decorative, protective finish.
- B. Carriers: Trolley system as required for configuration type, size, and weight of partition and for easy operation; with ball-bearing wheels.
- C. Aluminum Finish: Mill finish or manufacturer's standard, factory-applied, decorative finish unless otherwise indicated.

2.4 ACCESSORIES

- A. Pass Doors: Swinging doors built into and matching panel materials, construction, finish and thickness, complete with operating hardware. Hinges finished to match other exposed hardware.
 - 1. AAMA 920 compliant, tested to 500,000 opening and closing cycles.
 - 2. Accessibility Standard: Fabricate doors to comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design" and ICC A117.1.
 - 3. Width as indicated on drawings.
 - 4. Pass-Door Hardware: Equip pass doors with the following:
 - a. Lock: Key-operated lock with cylinder, keyed to master key system, operable from both sides of door. Include two keys per lock.
- B. Sill: Floor sockets, as selected by Architect from manufacturer's full range of options

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine flooring, floor levelness, structural support, and opening, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of operable glass-panel partitions.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. Install operable glass-panel partitions and accessories after other finishing operations, including painting, have been completed in area of partition installation.
- B. Install panels in numbered sequence indicated on Shop Drawings.
- C. Broken, cracked, chipped, deformed, or unmatched panels are not acceptable.

3.3 ADJUSTING

- A. Adjust operable glass-panel partitions, hardware, and other moving parts to function smoothly, and lubricate as recommended by manufacturer.
- B. Adjust pass doors to operate smoothly and easily, without binding or warping.
- C. Verify that safety devices are properly functioning.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain operable glass-panel partitions.

END OF SECTION 10 22 39.13

SECTION 10 44 13 - FIRE PROTECTION CABINETS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Fire-protection cabinets for the following:
 - a. Portable fire extinguisher.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section and by Division 10 Section "Fire Extinguishers" concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Show door hardware, cabinet type, trim style, and panel style. Include roughing-in dimensions and details showing mounting method and relationships of box and trim to surrounding construction. Include accessories.
 - 1. Non-rated fire protection cabinets.
- B. Product Schedule: For fire-protection cabinets. Indicate whether recessed or semi-recessed. 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 and fire extinguishers from single source from single manufacturer.

2.2 NON-RATED FIRE-PROTECTION CABINET

- A. Cabinet Type: Suitable for fire extinguisher.
- B. Cabinet Construction: Nonrated.
- C. Cabinet Tub 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).
 - 2. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; 1620.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Ambassador 2015.
 - c. Larsen's Manufacturing Company; Architectural Series 2712-R.
- E. Door and Frame Material: Steel sheet.
- F. Door Style: Fully glazed panel with frame.
- G. Door Glazing: Tempered float glass (clear).
- H. 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 continuous hinge, of same material and finish as trim, permitting door to open 180 degrees.
- I. 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." Lettering color and orientation as directed by Architect.

2. Alarm: Alarm that actuates when fire extinguisher is removed from cabinet and that is powered by batteries.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Safety Technology International, Inc.; Mini Theft Stopper, Model STI-6255, or comparable product.

J. 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:
 - 1) Exterior: Red.
 - 2) Interior: White.
2. Tempered Float Glass: ASTM C1048, Kind FT, Condition A, Type I, Quality q3, 3 mm thick, Class 1 (clear).

K. Placement: Provide where noted on drawings.

2.3 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.

2.4 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.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine walls and partitions for suitable framing depth and blocking where recessed cabinets will be installed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Prepare recesses for recessed 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 height indicated below:
 - 1. Fire-Protection Cabinets: 40 inches above finished floor to top of cabinet rough opening.
- B. Fire-Protection Cabinets: Fasten cabinets to structure, square and plumb.
 - 1. Fasten alarm to inside back surface of fire protection cabinets, located to allow fire extinguisher to rest securely on bottom of cabinet.

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.
- 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 correction by finish touchup or similar minor corrective procedures.

END OF SECTION 10 44 13

SECTION 10 44 16 - FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals required by this Section concurrently.

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.
 - 1. Mounting brackets.
- B. As-Specified Data: If the product to be incorporated into Project is as specified by manufacturer name and product designation in Part 2 of this Specification Section, submit the “**As-Specified Verification Form**” (attached to Division 01 Section “Submittal Procedures”) for each item listed below, otherwise submit full Product Data for the following:
 - 1. Wet-chemical type (K).
 - 2. Multipurpose dry-chemical type in steel container (ABC).
 - 3. Identification.
- C. Product Schedule: For fire extinguishers. Coordinate final fire-extinguisher schedule with fire-protection cabinet schedule to ensure proper fit and function.
- D. Warranty: Sample of special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fire extinguishers to include in maintenance manuals.
- B. Warranty: Executed special warranty.

1.6 COORDINATION

- A. Coordinate type and capacity of fire extinguishers with fire-protection cabinets to ensure fit and function.

1.7 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to correct 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: Minimum of five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 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.

2.2 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

- A. Fire Extinguishers: Type, size, and capacity for each mounting bracket indicated.
 - 1. Source Limitations: Obtain fire extinguishers and fire-protection cabinets from single source from single manufacturer.
 - 2. Valves: Manufacturer's standard.
 - 3. Handles and Levers: Manufacturer's standard.
 - 4. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.
- B. Wet-Chemical Type (K): UL-rated 2-A: K, 1.6-gal. nominal capacity, with potassium acetate/citrate/carbonate-based chemical in stainless-steel container; with pressure-indicating gage.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Ansul by Johnson Controls Company; K-Guard K01-3.
 - b. Croker, a division of Fire-End & Croker Corporation; 4834.

- c. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Saturn 15.
 - d. Larsen's Manufacturing Company; WC-6L.
- 2. Placement: On mounting bracket.
 - a. Provide in Kitchen, in locations indicated, and in compliance with requirements of authorities having jurisdiction.
- C. Multipurpose Dry-Chemical Type in Steel Container (ABC): UL-rated 4-A:80-B:C, 10-lb nominal capacity, with monoammonium phosphate-based dry chemical in enameled-steel container.
 - 1. Products: Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to:
 - a. Croker, a division of Fire-End & Croker Corporation; 4010.
 - b. JL Industries, Inc., a division of the Activar Construction Products Group, Inc.; Cosmic 10E.
 - c. Larsen's Manufacturing Company; MP10.
 - 2. Placement: On mounting bracket.
 - a. Provide in locations indicated and in compliance with requirements of authorities having jurisdiction.

2.3 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 baked-enamel finish.

2.4 IDENTIFICATION

- A. Identification: Projecting sign complying with authorities having jurisdiction for size and location. Locate as indicated by Architect.
 - 1. Identify fire extinguishers with graphic fire extinguisher image applied to projecting mounting surface.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Compliance Signs, Inc.; Red 3D Triangle-Mount (Graphic Only) Fire Extinguisher Sign NHE-13844Tri, or comparable product.

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.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 INSTALLATION

- A. General: Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.
 - 1. Mounting Brackets: Top of fire extinguisher to be at 40 inches above finished floor.
- B. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.
- C. Identification: Fasten projecting signs on wall centered above each fire extinguisher, aligning top of sign with top of adjacent door frame, unless otherwise indicated.

END OF SECTION 10 44 16

SECTION 11 61 53 – MOTORIZED RIGGING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Read and be governed by General Conditions of the Contract and Sections of Division 01.

1.2 DEFINITIONS

- A. "Owner" as used in this section means the representative of Lakeland School District.
- B. "Contractor" as used in this section, refers to the primary contractor for the supply and installation of Theater Equipment Work.
- C. "Construction Manager" or "CM", as used in this section refers to the firm managing the renovation of Lakeland HS.
- D. "Electrical Contractor" or "EC" as used in this section refers to the contractor for Division 26.
- E. "Architect" as used in this section refers to Tetra Tech Architects & Engineers
- F. "Structural Engineer" as used in this section refers to Tetra Tech Architects & Engineers.
- G. "Electrical Engineer" as used in this section refers to Tetra Tech Architects & Engineers.
- H. "Furnish" as used in this section, means "supply, complete with instruction and supervision for installation."
- I. "Provide" as used in this section, means "supply, install, and make operable, in compliance with theater equipment contract documents."
- J. "NIC" as used in this section and on the drawings, means "not included in subcontract, not to be provided."
- K. "By Others" as used in this section and on the drawings, means "not included in this subcontract, provided as part of another subcontract."
- L. "Or As Approved" as used in this section and on the contract drawings means "substitution only after written approval by Architect".

1.3 SCOPE OF WORK

- A. All items of Work included in this section shall be provided and installed under a single subcontract by a single Contractor. Examine the architectural, structural and electrical drawings to determine their relationship to the work of this section. Provide all work as described in this section.
- B. The work shall consist of:
 - 1. Demolition and removal of existing stage rigging system (front of house cove, tormenters pipes and dead hung front light position mid house).
 - 2. Installation of motorized pipe battens
 - 3. Removal, storage and reinstallation of movie screen

1.4 RESPONSIBILITIES

- A. Provide complete, functional systems as per this section and industry practice.
- B. The theater equipment systems are specified to a minimum performance standard. Do not interpret listing of standard components or brand names as acceptance of those items. Make any and all alterations to standard design and construction of any equipment necessary to meet the requirements of this section.
- C. Verify in the field: all dimensions, materials, clearances, tolerances and the adjacent work of other trades to ensure proper installation and operation of the theater equipment. Coordinate with the CM, as well, to ensure proper installation and operation of the theater equipment.
- D. Omissions and/or errors in the specification and contract drawings shall not relieve the CONTRACTOR of the responsibility to provide properly functioning theater equipment systems. Likewise, failure to field verify all site conditions shall not relieve the CONTRACTOR of the responsibilities described herein
- E. Review the Architectural and Structural Documents and assess the quantities, locations and sizes of mounting steel provided under work of other sections. Provide all additional mounting steel not shown on Architectural and Structural drawings required by the Work of this Section. Do not make any alterations to steel work by others without prior, express written consent of the Architect. Make such alterations only as directed by the Architect.

1.5 QUALIFICATIONS

- A. The CONTRACTOR shall be the exclusive designer, engineer and manufacturer of all of the theater equipment.
- B. Only bids from listed CONTRACTOR's or their authorized agents will be considered. Only equipment from listed CONTRACTOR's may be bid.
- C. List of principal officers and design and service engineers.
- D. CONTRACTOR to maintain project management staff to coordinate installation of rigging systems and equipment with CM and other building trades.
- E. Project management staff, themselves, shall have experience with five (5) projects of similar size and scope.
- F. List of not less than 10 projects of similar size and scope completed within the five years on which CONTRACTOR has provided full services: product engineering, shop drawings, manufacture, commissioning and training. In each instance, indicate specifics of scope of fabrication and installation. Include a contact list: name, address and phone numbers of person(s) directly responsible for operation and maintenance of equipment in each facility.
- G. List of representative current projects and approximate contract value. Include list of names, phone numbers and addresses of owner, owner's representatives and Contractor.

- H. For projects described in number 4, above, list of names of persons who supervised preparation of shop drawings, manufacture of components, and installation of equipment.
- I. List of names, phone numbers, and addresses of persons who would do project management, product engineering, supervision of shop drawing, supervision of testing and user training for Production Lighting System should this contract be awarded.
- J. Bids from listed Theater Equipment Subcontractors, or their authorized agents, must be submitted with all information listed under Bid Submittals herein.

1.6 CODES, STANDARDS AND REFERENCES

- A. Supply materials, components and assemblies which are UL listed and meet all applicable codes, standards and specification applying to the work of this section.
- B. If laws, ordinances, or any public authorities require any Work of this Subcontract to be specially tested, provide such testing and secure approval for operation from responsible legal authority having jurisdiction over each item.
- C. Secure review of Work by officials responsible for enforcement of code standards, and make all corrections, changes and additions required, at no increase in contract price. Provide certificates of acceptance, operation, and compliance as part of the Theater Equipment Manual, as specified herein.

1.7 OWNER'S TESTING AGENCY

- A. The Owner may engage and pay for an independent testing agency to provide qualified inspectors to perform shop and field testing and inspection to the extent deemed desirable or necessary to evaluate conformance with the Theater Equipment Documents. If such testing agency is engaged, provide the Owner with timely notification of readiness for testing, and cooperate with agency in all tests performed.

1.8 BID SUBMITTAL

- A. Provide submittal materials as noted in Div. 01. Include a complete list of all systems and BOM with appropriate component breakdown necessary to evaluate completeness of bid.
- B. List any exceptions taken. Cite specific reference by page and line number and briefly describe nature of exception. The absence of this list shall indicate acceptance of all terms of the contract documents.
- C. Include, where applicable, standard cut sheets and specifications for all equipment and systems. Note all custom modifications or deviations from standard products.
- D. The bill of materials is for the purpose of evaluating bids only. Architect shall use bill of materials and included documents to establish which bids meet specification. Bids not meeting the specification, based upon this review, may be rejected. The bill of materials shall not be the exclusive determinant of the equipment and services required for performance of the work of this section.

1.9 POST TENDER MEETING

- A. If requested, meet with the Architect at the office of the Architect prior to beginning work on shop drawings. Project manager and chief project designer for CONTRACTOR must attend and be prepared to review the schedule, and to discuss the concepts described in the Theater Equipment Documents and proposed methods of execution of those concepts.

1.10 SHOP DRAWINGS

- A. Submit shop drawings in accordance with requirements of Division 01. All shop drawings shall be submitted to Architect.
- B. Engineer, design and draft all shop drawings to represent the actual fabrication and installation drawings and details. Copies or tracings of the Bid Drawings are not acceptable as shop drawings and shall be rejected.
- C. Submit shop drawings as packages, complete with drawing indices, where each package contains all the information necessary to describe one system completely. With each package, submit general arrangement drawings, showing all related Work of this Subcontract, along with large scale plans, elevations and sections and all other necessary detail Drawings of sub-systems, components, and assemblies of components.
- D. If any of the field inspections specified herein reveal the need for changes in size, detail, or similar considerations after review of shop drawings, revise and resubmit the drawings, with the changes clearly noted, for review.
- E. All shop drawing submittals to be prepared by CONTRACTOR. Submittals prepared by a manufacturer shall not be acceptable.

1.11 ENGINEERING CALCULATIONS

- A. Submit engineering calculations as required by customary industry practice and as requested by Architect.

1.12 SHOP DRAWING REVIEW

- A. No Theater Equipment shall be manufactured, fabricated, shipped, or installed prior to final review of the shop drawings by the Architect. Only shop drawings returned and marked "Reviewed" may be used in the Work of this Subcontract. Shop drawings returned and marked "Make Corrections as Noted" must be corrected before they may be used in the Work of this Subcontract, but do not need to be resubmitted.
- B. Correct and resubmit any shop drawings returned and marked "Revise and Resubmit" or "Rejected." Clearly note each revision to the shop drawings at the actual location on the drawing, in a revision record at each drawing's title block, and in a revision record on the drawing index. The revision record at the title block must include the date and nature of all changes to the drawing.

- C. Packages of shop drawings that are incomplete shall not be reviewed, until such time as a complete set of relevant drawings, cut sheets and engineering calculations is submitted. It is impossible for the Architect to adequately review the design of systems unless all details have been represented.
- D. Review of shop drawings by the Architect is for assuring conformance with the design concepts and with information given in the Theater Equipment Documents. Nonconformities and errors detected during review will be noted on the shop drawings and returned upon completion of review. The Architect is not responsible for completeness or accuracy of the shop drawings.
- E. Acceptance of shop drawings, cut sheets or engineering calculations including deviations not detected during review does not relieve this Subcontractor of sole responsibility for product engineering and design, or for providing materials and work conforming strictly to the Theater Equipment Documents.

1.13 SAMPLES

- A. As requested by Architect.

1.14 INSPECTION REPORTS

- A. Inspect site prior to installation of equipment. If conditions exist that are contrary to proper installation the theater equipment, directly inform Architect. Failure to identify such conditions shall constitute acceptance of them and CONTRACTOR shall be responsible for any required revisions or additions necessary for proper installation and operation the theater equipment systems.

1.15 OPERATION MANUALS

- A. Supply five (5) copies of an Operations Manual in 8-1/2" x 11" 3-ring binders. Where page is larger, it shall be folded to fit within the binder. Videotaped documentation as an instructional aid is welcome but shall not be acceptable as a substitute for this manual. Manuals shall include, but not be limited to:
 - 1. System description for each system.
 - 2. Safety and operating instruction for all equipment and systems.
 - 3. List of periodic maintenance functions and a timetable for their execution, including, but not limited to lubrication of bearings; checking and replacing seals, linkages and belts; and checking moving parts such as guides.
 - 4. Instruction in troubleshooting and fault-finding, including list of typical problems and suggested solutions.
 - 5. Certificates of compliance and acceptance by the appropriate authorities for each item which is required to be flame resistant or non-flammable;
 - 6. Warranty

7. As Built drawings (reduced set)

8. Index

- B. Submit the manual to the Architect for review at least one (1) month prior to the Final Inspection. If the manual is rejected, revise as needed and resubmit for review prior to delivering to the Owner. Certain payments to this Subcontractor shall be retained until the Theater Equipment Manual is received by the Owner in good order, as specified.

1.16 RECORD DRAWINGS

- A. CONTRACTOR shall prepare a complete, full size set of shop drawings reflecting "as-built" conditions. They shall be submitted along with the operations manuals.

1.17 GUARANTEE AND WARRANTY

- A. Provide a one (1) year written guarantee covering all labor, materials and workmanship incorporated into the work. Warrantee shall commence from date of Owner acceptance. Indicate date of expiration on warranty.
- B. Carry out all Warranty Work at no additional cost to the Owner for any parts, labor, or transportation. Perform all Warranty Work with personnel in employ of this Subcontractor. Do not subcontract or assign any Warranty Work to another company or service without written approval of such assignment in advance from the Owner.
- C. If, during warranty period, failure occurs in a piece of Theater Equipment which is necessary for the safe operation of any system, provide temporary replacement equipment within twenty-four (24) hours of notice by the Owner. Provide permanent on-site repair within five (5) days of notice.
- D. If failure occurs in a piece of Theater Equipment which is required for an immediately upcoming performance, act promptly and in concert with the Owner's schedule to ensure that the performance may go on as scheduled and without significant impairment.
- E. If a particular component, part, or piece of equipment fails more than three (3) times during the warranty period; the failure shall be deemed due to error in product engineering. In that event, take whatever action is necessary to modify or correct the defect by design change. Provide temporary backup or replacement equipment within twenty-four (24) hours of notice. Provide permanent, redesigned, replacement equipment on a work schedule which does not conflict with rehearsals or performances.
- F. The warranty on the components and equipment modified or replaced due to error in product engineering shall be the same as for the original components and equipment and shall commence from date of installation of modified or replaced component or equipment.

1.18 INSPECTION AND REPORT TO OWNER

- A. Provide a crew to inspect the stage rigging installation at a mutually agreeable time approximately six (6) months after the Installation is completed. Repair all failed items covered under the Warranty, and trim or adjust all equipment, including slack in operating lines or wire ropes. Include a comprehensive inspection and provide a comprehensive written inspection report to the Owner.
- B. Call to the attention of the Owner any problems not covered under the Warranty, for Owners' consideration of a possible contract for repair.

1.19 CONTINUING MAINTENANCE PROPOSAL

- A. After substantial completion, supply to the Owner a proposal for continuing maintenance and service to commence upon expiration of the warranty period.

1.20 TRAINING

- A. Supply training to Owner's operating personnel on operation and care of system for not less than eight (8) hours. Instruction shall include, but not be limited to:
 - 1. Proper maintenance of all stage rigging
 - 2. Trouble-shooting
 - 3. Replacement procedures (for user serviceable items)
 - 4. Review operation manual
- B. Training shall be scheduled at a time mutually agreed upon by Owner and CONTRACTOR. Training shall be by qualified staff of CONTRACTOR.

PART 2 - PRODUCTS

2.1 MOTORIZED HOIST

- A. General
 - 1. Purpose-built for overhead lifting of theatre lights, equipment, curtains, and scenic elements, whether used on stages, in auditoriums or places of public assembly where people move beneath suspended or moving loads. Incorporate mechanical, electrical and safety features inherent to this equipment.
 - 2. Equipment Items: New and conform to applicable provisions of Underwriters' Laboratories (UL 1340), American National Standards Institute (ANSI E1.6-1:2018, and C63.4:2014), and the National Fire Protection Association (NFPA 70).
 - 3. Provided wire rope shall be galvanized.

4. Materials to be new, unused and of latest design. No refurbished materials allowed.
5. Anodization as Required per this Specification: Manufacturer's standard finish and color except as noted.

B. Performance and Design Requirements:

1. Minimum Design Factor: 10 for equipment and hardware specified.
2. The following factors must be used:
3. Cables and Fittings: 10:1 Design Factor.
4. Cable Bending Ratio: 25 times diameter.
5. Maximum fleet angle: 0 degrees

2.2 RIGGING COMPACT SELF-CLIMBING HOIST

A. Electronic Theatre Controls (ETC)

1. Address: 3031 Pleasant View Rd. PO Box 620979, Middleton WI 53562-0979
2. Telephone 1-608-831-4116

B. Provide and install two (1) fixed speed motorized rigging set as indicated in the contract drawings.

C. Basis of Design: Prodigy Flypipe as manufactured by ETC.

1. Hoists: Self-climbing. Supported Travel: 50 ft (15.24 m). Hoists not self-climbing are not acceptable.
2. Standards Compliance: UL Listed and tested as a complete system made up of UL listed components.
3. Dual 1/8 inch (3 mm) Wire Rope Lift Line Sets: Design factor of 10:1. Ultimate Combined Strength: 4,200 lbs (1905 kg).
4. Support a 500 lbs (227 kg) live load suspended from hoist as follows:
5. FlyPipe Drive Section (HxWxL): 26.25 x 14 x 132.5 inches (668 x 356 x 3365 mm). Weight: 140 lbs (63 kg).
6. FlyPipe End Section (HxWxL): 12 x 5.5 x 85.5 inches (305 x 140 x 2172 mm). Weight: 40 lbs (18 kg).
7. FlyPipe Span Section (HxWxL): 12 x 5.5 x 120 inches (305 x 140 x 3048 mm). Weight: 60 lbs (27 kg).
8. Aluminum Strut-Compatible Channel: Integrated into bottom of FlyPipe sections. Channel supports point loads up to 250 lbs (113 kg).
9. Hoists not supporting direct connections of stage equipment or lighting fixtures are not acceptable.

D. Major Components:

1. Motor section.
2. Span sections; if required.
3. End section.
4. Lift Lines: A set of TwinLines (dual 1/8 inch (3 mm) GAC lift lines) per section.
5. Clamps: One TwinLine Clamp per TwinLine set.
6. Pipe batten; if required.

7. Powerhead Enclosure: Fully enclosed, powder coated sheet metal preventing contact with moving and electrical parts. Protects against dirt, dust, and debris.
8. Powerhead Components: Gear motor, motor brake, limit switches, control electronics, emergency contactor, position sensor slack line detector, and information storage

E. Local User Interface:

1. Hoist up/down control.
2. Limit switch override buttons; tool accessible.
3. Address switches.
4. Status LEDs.
5. Gearmotor and Motor Brake: An integral unit from a single manufacturer.
6. Operating Voltage: 208 or 480 Volt 60 Hz 3 Phase.
7. Motor Brake: Capable of holding 125 percent of motor full load torque.
8. Spring Actuated: To apply and hold braking force.
9. Magnetically released and held open upon actuation.
10. Limit Switch: Mounted in drive section for hard "normal" and "ultimate" end of travel limits.
11. Hard End of Travel Limits: Set and adjusted at time of installation. Installation: Aided by indicator light on Powerhead enclosure panel. Any system where limit is set only by audible or tactile means is not acceptable.
12. Position Sensor System: Built into drive section. An encoder sensor providing accurate position information for each batten at power-up of system, and continually throughout normal operation. Hoisting systems requiring re-homing are not acceptable.
13. Slack Line Detector: Built into Powerhead enclosure. When a slack line condition in excess of 24 inches develops in a lift line, the detector removes power from the hoist. Hoist is allowed to move in the upward direction to allow removal of the slack line fault cause.
14. Information Storage: Within Powerhead.
15. Record of severe fault conditions with date and time stamp.
16. Record of E-stops, overloads, moves and power cycles.
17. Record of travel distance since installation and inspection.
18. Over Speed Load Arrest Brake: When an over speed mechanism detects a runaway condition, it trigger a load arresting device to stop the load.
19. Brake noise shall not be audible at any time in operational cycle of hoist.

20. Normal hoist operation must not be limited by load brake heat or noise.
21. Wire Rope Cable Drum: Each drive, span, and end section contains one drum.
22. Each Drum: Accommodate two, 1/8 inch (3 mm) diameter 7x19 galvanized aircraft utility wire rope lift lines up to 50 ft (15.24 m) long in a compact manner on cable drum.
23. Drum Design: Prevent wire rope pairs from tangling or crossing over.
24. Hoist Power and Control Cables: Each drive section requires a power cord and Cat 5e or better connection between receptacles mounted in hoist and hoist power and communication distribution (PCD) equipment by ETC.
25. PCD Equipment: Must have barrier between high and low voltage components.
26. Strain relief at drive section must be provided.
27. Breaker: 20 amp 3-phase located in the PCD.
28. Pipe Battens: Outside Diameter: 1.9 inch (48 mm). Construction: 0.150 inch (4 mm) extruded aluminum with 0.150 inch (4 mm) vertical web available for use with hoist.
29. Extruded with a witness line to indicate web position.
30. Support Distributed Load: 150 lbs (68 kg) over a 10 ft (3048 mm) span.
31. Support a Point Load: 65 lbs (29 kg) over a 10 ft (30348 mm) span.
32. Weight: 1.5 lbs per ft (2.23 kg per m) or less.
33. Designed to a 10:1 safety factor.
34. Finish: Black hard coat anodization.
35. Power and Data Distribution: Hoist and hoist cable management system allows attachment of dedicated circuit and data distribution equipment, UL listed for this application. All cables to be UL Listed.
36. Helix Cable Management for Hoist Power and Control: Supplied motor power and control wiring is fed to motor control enclosure by multi-conductor SO cable and Cat 5e or better cable. Each cable to be held in place at enclosure by a dedicated strain relief assembly.
37. Cable Management System for Electrics: Helix. See "Cable Management" article in this specification.

F. Controls:

1. Basis of Design: QuickTouch Preset rigging motor control system as manufactured by ETC, Inc.
2. General: For controller.

3. Purpose-built to manage and operate motors designed for overhead lifting.
4. UL Listed and fabricated from UL Listed components.
5. Incorporate mechanical, electrical and safety features inherent to equipment.
6. Controller supports 12 motors. Control of up to 96 motors is possible with use of MCX Nodes.
7. One connection for motor communication. 24 motors per connection.
8. Control System: Surface, panel, or rack mounted primary controller and up to three external E-stop stations.
9. Employ controller, a power and control distribution infrastructure, and motors. Separate drive cabinets or motor-starters is not acceptable.
10. Emergency Stop and Hold-To-Run (Dead-man) Signals: Between control station and motor starters or drives in motors. Hard wired 24 Volt signals.
11. Physical, Industrial Pushbuttons: A "Dead-Man" Signal Operation: Required, so operator must be at console and pressing a button to initiate and continue motion.
12. Software and bus signal transmission is not acceptable.
13. For safety, movement initiated from touch screen is not permitted.
14. Allowing motors to run without operator at console is not permitted.
15. No permanently moving components such as hard drives or fans.
16. Maintenance free and quiet during operation.
17. Mechanical:
 - a. Enclosure: Formed steel and machined aluminum; Finish: black, scratch-resistant, powder-coat paint.
 - b. Flush wall mount bracket.
 - c. Surface wall mount bracket.
 - d. Rack mount bracket.
 - e. Locking cover.
 - f. Locking cover with E-stop cutout.
 - g. Face Panel: Printed labeling identifying button functions.
 - h. Identifies system as a controller for stage rigging.
18. Electrical: No discrete wiring connections. Terminate wiring into wall mounted bracket. Power Requirements: 24 VDC.
19. Functional:
 - a. User Interface: One illuminated and dimmable "GO" button.

- b. Emergency Stop (E-Stop): Hardwired NFPA-79 compliant mushroom head button with illuminated ring surrounding button.
 - c. Ring will blink in case of E-stop condition, illumination level is adjustable
 - d. Software or serial bus E-Stop systems are not acceptable.
 - e. Controller to support up to three remote E-stop stations.
 - f. LCD Screen: 7 inch (178 mm) industrial grade multitouch LCD display communicates system information in symbols, colors, and readable text.
 - g. Control system employs an ambient light sensor and proximity sensor for automatic wakeup of display.
 - h. Intensities of indicator lights and LCD intensity are dimmable and automatically adjust based on ambient light conditions.
- 20. User Access Levels: Six access levels with differentiated functionality. Controllers without password-protected user access levels are not acceptable.
 - 21. Fault Conditions: Reported in readable text. A pattern of illuminated or blinking lights is not acceptable.
 - 22. Manual Operation: Directly move selected motors.
 - 23. Preset Operation: Store up to 999 presets with numbers ranging from 1 to 999.
 - 24. Fixed Speed Remote Control Pendant: 50 ft (15.24 m) long attached cable and plug.
 - 25. Remote Enable Pendant: 50 ft (15.24 m) long attached cable and plug.
 - 26. Secondary QuickTouch Preset Controller:
 - 27. Controllers share configuration and settings.
 - 28. Configuration or setting changes and hoist status and telemetry are to be available on both controllers simultaneously.
 - 29. Only one controller to control hoist movement at any time.
 - 30. System Diagnostics and Monitoring:
 - 31. Automatic Self-Tests.
 - 32. System Inspection Reminder.
 - 33. Faults and Failures.
 - 34. System and Individual Motor History.
 - 35. Configuration Software: Allow easy and simple configuration of system by factory trained and authorized installers.
 - 36. Inspection: On-Board software allows easy and quick annual inspection of control system functions by a factory trained and authorized inspector.

G. Bill of Materials Rigging Systems to Consist of:

1. Hoist 1 - FP/Border

2	8006A1014	FP-DRV-208XL-B - FlyPipe Drive + End Sections 208V 48-58' black
8	8006A1010	FP-MID-B - FlyPipe Span Section, black

H. Helix Cable Management to consist of:

2	8006A2055	HLX50-208-0 - Helix cable management system to consist of: - Helix system to support up to 50' of vertical travel - Hoist power and data cables - 208V

1. PR-3EL & PR-3ER

2	QUOTE	9106AD-1R2GO - Surface Mount Outlet Box with: 6 – panel mount 20A Edison Duplex (5-20RD) connectors wired on 3 - 20A circuits 1- 2-port Gateway
2	7099A1055	FlyPipe Distro Bracket Kit

I. Hoist Power and Control Distribution to consist of:

2	8050A2018	PCD-F-FP - FlyPipe Power & Control Distribution Faceplate; (1) 208VAC Power Outlet and (1) Control Outlet
2	8050A2003	PCD-SBB - Power & Control Distribution - 9" Surface Mount Back Box with Voltage Barrier

J. QuickTouch+ Controller and Control Accessories to consist of:

1	8061A1008	QT+ MK2 6CH - QuickTouch+ Mk2 Controller, 6 channel
1	8055A1101	QT-SBB-LG - Large QuickTouch Surface Back box
1	8055K1001	QT-D-LG - Large QuickTouch Door
1	8055A1006	FSRC - Fixed Speed Remote Control - Hand Held w/ 50' lead

PART 3 - EXECUTION

3.1 COORDINATION

- A. Provide a complete and working installation of all Theatre Equipment, coordinated with work of all other subcontractors. Consult with subcontractors doing related work and adjoining work in order to provide a complete installation of first quality.
- B. Coordinate all drawings, communications, schedules, etc., with the Contractor. Submit all drawings and communications to the Owner, Architect through the General Contractor.

- C. Review shop drawings of any structural steel, miscellaneous metal, wood, finishes and electrical Work relating to the Theatre Equipment and return comments on those shop drawings to the Contractor in a timely fashion, so that comments can be taken on by other subcontractors. Ensure that the engineering of equipment which must be attached to any structural steel, miscellaneous metal, wood or electrical work is completed in a timely fashion, so that any alterations to such work by others can be scheduled with no delay in overall job progress.

3.2 ENVIRONMENTAL CONDITIONS DURING SHIPPING AND INSTALLATION

- A. Protect all Theatre Equipment from dust and weather prior to, during and after installation, up to the time of a successful Completion Checkout. Provide delivery, storage and handling of all equipment and tools during the installation period. Protect all Theatre Equipment until Practical Completion.
- B. Provide packing and protection of equipment and materials for shipping from factory to the Place of the Work. Pack equipment to withstand the intended method of transport, and environments expected. Take full account of the effects of rough handling, high and low temperatures, dust, heavy rain, direct sunlight and high relative humidity during transit and installation. The packing shall, where necessary, reduce the effects of condensation. Bright metal and small machined parts shall be gelatin dipped or otherwise treated for long term protection between manufacture and installation. Replace any items which suffer damage during transit or storage due to unsatisfactory packing without charge.
- C. Take all necessary precautions to prevent rusting of cables, sheaves and all other steel members. Protect any equipment set before the building is enclosed from mechanical, dirt and weather damage. Protect any equipment set in the presence of the work of other subcontractors from mechanical, dirt and water damage.
- D. Install blocks, wire ropes, guides, and other mechanical items only after the building is completely enclosed and free of dust or other harmful elements. Protect all equipment during installation and up to Final Inspection from work of other trades. This includes but is not limited to, adequate wrapping, masking, and covering to prevent splatter and ingress of dust, paint, and debris.
- E. Do not store any equipment or components unprotected or outdoors, under any circumstances.

3.3 INSTALLATION

- A. Do all Work required to properly install and secure all Theatre Equipment included in this Subcontract.
- B. Do no installation Work on Theatre Equipment prior to review of the shop drawings, details, or cut-sheets of the materials, equipment, components, or items to be installed.

3.4 REVIEW OF FIELD CONDITIONS

- A. Confirm by visit to the Place of the Work, and by report from the Contractor all field conditions which may affect manufacture and installation of Theatre Equipment prior to fabrication. Verify existing conditions, measurements and other data that are required for proper execution of the Work of this Subcontract.

3.5 FIELD QUALITY

- A. Follow the highest working standards and practices for the industry and provide quality control procedures acceptable to the Architect and Contractor.
- B. Ensure that all work is performed by mechanics, welders and electricians (as appropriate) skilled in their trade, and in accord with reviewed shop drawings. Provide a qualified, factory trained site supervisor to supervise all work.
- C. Fabricate and install all items in accordance with the manufacturer's recommendations, and these specifications. Install all equipment and components accurately, true to plumb, line and level.
- D. Clearly label all demountable parts which have been test assembled and demounted off site to ensure correct re-assembly. Remove factory identification marks after installation, unless otherwise instructed by the Architect.

3.6 ITEMS ATTACHED TO EXISTING WORK

- A. Furnish all items required to properly install and secure Theatre Equipment in place, including any additional hardware, materials, or components necessary to accommodate actual field conditions.
- B. Place, install and connect all Theatre Equipment complete with all members, materials, bolts, nuts, washers, clips, fittings, supports, and other items required for the correct installation to existing work.
- C. Do no cutting or drilling of existing structural work without prior, express written consent of the Architect.

3.7 CONNECTIONS

- A. Provide slotted holes for truing up steel members requiring accurate field alignment. Provide holes in steel as required for attaching blocking, skirts, and other miscellaneous items.
- B. Account for eccentricity in all connections to contend with field conditions. No connections, however, shall be eccentrically loaded.
- C. Bring assembled parts into close contact; use drift pins only to bring members into position, do not enlarge or distort holes.
- D. Tighten all bolts to the torque recommended for the size and type of bolt used. During Final Inspection, bolts will be selected at random for inspection and checking of torque.
- E. Do not use welded connections on any equipment requiring on-site alignment and adjustment. Where specification sections call for welded installation of blocks, or similar equipment, clamp the equipment to structural steel initially. Prior to welding the equipment to the steel, install, align and field test the entire system. During welding of blocks, winches and similar to structures, provide proper protection for the wire rope, sheaves and neighboring building systems.

3.8 ALTERATION OF EQUIPMENT DETAILS

- A. If any equipment or component requires relocation or change of mounting detail, and this fact is not known until after shipment due to the sequence of Work, modify the equipment or provide new equipment to fit the revised location or mounting detail. Notify the Architect and document in a timely manner any such changes and submit all proposed changes to the Architect for review prior to alteration or fabrication.

3.9 PAINTING AND TOUCH-UP

- A. Provide all paint and supplies to correct minor cosmetic damage to equipment. Ensure that all equipment is clean and in perfect condition at time of Final Inspection.
- B. Repair or replace any equipment which has suffered non-cosmetic damage prior to time of Final Inspection.

3.10 WIRE ROPE AND FITTINGS

- A. Install all wire rope, fittings and clips in accordance with wire rope manufacturer's recommendations as to size, number and method of installation. Install all wire rope rigging to prevent abrasion of the wire rope against loftblocks, headblocks, spacers, side plates, angled braces or any part of the building structure or equipment.
- B. Form eyes over wire rope thimbles of correct sizes. Seize all wire rope ends before cutting to length. Cut free ends of wire rope as short as possible. Attach free ends of wire rope to standing portions of wire rope with heat shrink tubing and/or nylon cable ties to keep end secure and individual wire strands from fraying.

3.11 FLEET ANGLES

- A. Align all blocks and sheaves to provide acceptable fleet angles. Do not exceed manufacturer's recommended fleet angles, except where specifically accepted by the Architect on shop drawings. In no case shall fleet angle exceed 2°.

3.12 MULEBLOCKS

- A. Where required, provide and install muleblocks and additional sheaves as required to support wire ropes and prevent wire ropes from rubbing or interfering with any obstruction.

3.13 ADJUSTING, FIELD TESTING AND PRE-COMPLETION CHECKOUT

- A. During installation of equipment, arrange for tools, instruments, and access as necessary for inspection of the Theatre Equipment by the Owner and Architect.
- B. Such inspections shall not eliminate the possible rejection of various components at the Final Inspection.

- C. Any preliminary test conducted prior to completion shall not be construed as acceptance of the equipment, regardless of the successful results of such tests, and shall not alter the requirements for final testing at the Final Inspection.

3.14 SYSTEM PRE-TESTING BY CONTRACTOR

- A. Prior to providing written notice of readiness for testing (see FINAL INSPECTION), this Subcontractor shall conduct a thorough pre-testing of all systems and components to ensure they are working properly in conformance with this Specification. Conduct all tests required as if Architect were present to verify systems will not fail during Final Inspection period.

3.15 FINAL INSPECTION

- A. Upon completion of the installation, adjustment and field testing of all Work included in this Subcontract, conduct all the tests specified in the individual Specification Sections. Replace or adjust any system or component that fails any test and repeat tests.
- B. Upon successful completion of all tests specified notify Architect.
- C. Furnish sufficient workmen, tools, and instruments to operate the equipment and to repeat all of the tests called for in the specification along with any other adjustments and tests required by the Architect.
- D. Furnish all means of safe access as necessary for the Architect to visually inspect each and every component of each system.
- E. Coordinate tests with the General Contractor and notify all required parties. Ensure that at time of the Final Inspection, no other work is scheduled in the audience chamber or on the stage, and that all temporary bracing or scaffolding is removed to permit full operation of, and access to, equipment.
- F. Should the Owner or Architect judge that any equipment fails to conform with this Specification, repair or replace that equipment within thirty (30) days, and schedule a second inspection.
- G. Should the Owner or Architect judge that any work inspected is not substantially complete at time of the Final Inspection, complete that Work and schedule a second inspection.
- H. At the time of the second checkout, again provide all equipment, personnel and means of access to repeat all tests and adjustments required by the Architect. Ensure again that no other work is scheduled in the audience chamber or on the stage, and that all temporary bracing or scaffolding is removed to permit full operation of, and access to equipment.

3.16 REJECTIONS

- A. The Architect reserves the right to reject any part of the installation not complying with the Specifications. Carry out all necessary remedial work or replacement free of charge, and without delay to the Contractor.

3.17 FINAL SUBMITTALS

- A. After the Final Inspection, submit the following to the Owner:
- B. Receipts for delivery of uninstalled miscellaneous items, including, but not limited to, portable equipment and spare parts as described above.
- C. Record Drawings, as detailed in PART 1.
- D. Warranty, as detailed in PART 1.
- E. Submit four (4) copies of the accepted "Theatre Equipment Manual" to the Owner, and conduct the instruction session, as detailed in PART 1.
- F. All the above must be submitted prior to final acceptance of the Work of this Section.

END OF SECTION 11 61 53

SECTION 12 24 13 - ROLLER WINDOW SHADES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Manually operated roller shades with double rollers.
 - 2. Roller shade fabrics.
 - 3. Black-out Door window covers.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, and operating instructions for roller shades.
- B. Shop Drawings: Show fabrication and installation details for roller shades, including shadeband materials, their orientation to rollers, and their seam and batten locations, all dimensions, and clearances for each shade installation.
 - 1. Include typical elevation layout showing separation between shade units and meeting edges at corners with sections and details at head and sill between blind units and corners.
 - 2. Provide verified in field details showing all types of shade installation conditions.
 - 3. Components and conditions not fully dimensioned or detailed in manufacturers product data indicating relationship to adjoining construction.
 - 4. Manufactures specification instructions and details specific to components and conditions not fully dimensioned or detailed in manufactures product data.
 - 5. Provide data for all components required for installation.
- C. Samples for Verification and Initial Color Selection: For each type and color of shadeband material.
 - 1. Include Samples of accessories involving color selection.
 - 2. Actual color samples of manufactures full range – no color copies will be accepted.

3. Shadeband Material: Not less than 10 inches square. Mark inside face of material if applicable.
4. Roller Shade: Full-size operating unit, not less than 16 inches wide by 36 inches long for each type of roller shade indicated.
5. Installation Accessories: Full-size unit, not less than 10 inches long.

1.5 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of shadeband material, signed by product manufacturer.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For roller shades to include in maintenance manuals.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver roller shades in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.

1.8 WARRANTY

- A. Manufacturer's Warranty - Provide manufacturer's warranty including coverage of at least following components:
 1. Corrosion of all metal parts.
 2. Sagging, creasing, or breaking of slats.
 3. Sagging, creasing, or ripping of shadeband material.
 4. Smoothly performing mechanism without slippage or jams.
 5. Finish of all components matching in color, uniform, and against fading or discoloration.
 6. Defects in materials and installation workmanship.

1.9 FIELD CONDITIONS

- A. Environmental Limitations: Do not install roller shades until construction and finish work in spaces, including painting, is complete and dry and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.
- B. Field Measurements: Where roller shades are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operating hardware of operable glazed units through entire operating range. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain roller shades from single source from single manufacturer.

2.2 MANUALLY OPERATED SHADES WITH DOUBLE ROLLERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc; Access Dual Roller FlexShade Systems or comparable product by one of the following:
 - 1. Hunter Douglas Contract.
 - 2. MechoShade Systems, Inc.
- B. Chain-and-Clutch Operating Mechanisms: With continuous-loop bead chain and clutch that stops shade movement when bead chain is released; permanently adjusted and lubricated; with chain retainer.
 - 1. Bead Chains: Manufacturer's standard.
 - a. Limit Stops: Provide upper and lower ball stops.
 - b. Tension hold Down Device – to comply with Child Safety Standard ANSI/WCMA- this product must contain and be installed with the required clutch operated hold down device at all locations.
 - c. Hold Down Devices – provide sill, side wall or extender types- verify in field types required.
- C. Rollers: Corrosion-resistant steel or extruded-aluminum tubes of diameters and wall thicknesses required to accommodate operating mechanisms and weights and widths of shadebands indicated without deflection. Provide with permanently lubricated drive-end assemblies and idle-end assemblies designed to facilitate removal of shadebands for service.
 - 1. Double-Roller Mounting Configuration: Offset, outside roller over and inside roller under.
 - 2. Inside Roller:
 - a. Drive-End Location: Right or Left side as required per drawing layout.
 - b. Direction of Shadeband Roll: Regular, from back of roller.
 - 3. Outside Roller:
 - a. Drive-End Location: Right or Left side as required per drawing layout.
 - b. Direction of Shadeband Roll: Regular, from back of roller.
 - 4. Shadeband-to-Roller Attachment: Manufacturer's standard method.

- D. Mounting Hardware: Brackets or endcaps, corrosion resistant and compatible with roller mounting configuration, roller assemblies, operating mechanisms, installation accessories, and installation locations and conditions indicated.
- E. Roller-Coupling Assemblies: Coordinated with operating mechanism and designed to join up to three inline rollers into a multiband shade, not to exceed manufactures recommendation that is operated by one roller drive-end assembly.
- F. Inside Shadebands:
 - 1. Shadeband Material: Shadeband Material: Light-filtering fabric similar to “Sheer-weave Series 2400/2500” fabric by Draper Inc.
 - 2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - a. Type: Enclosed in sealed pocket of shadeband material.
- G. Outside Shadebands:
 - 1. Shadeband Material: Shadeband Material: Light-blocking fabric similar to “Sun-Bloc Series” fabric by Draper Inc.
 - 2. Shadeband Bottom (Hem) Bar: Steel or extruded aluminum.
 - a. Type: Enclosed in sealed pocket of shadeband material.
- H. Installation Accessories:
 - 1. Exposed Headbox: Rectangular, extruded-aluminum enclosure including front fascia, top and back covers, endcaps, and removable bottom closure.
 - a. Height: Manufacturer's standard height required to enclose roller and shadeband when shade is fully open.
 - 2. Endcap Covers: To cover exposed endcaps.
 - 3. Installation Accessories Color and Finish: As selected from manufacturer's full range.
 - 4. Recessed Shade Pocket: Rectangular, extruded-aluminum enclosure designed for recessed ceiling installation; with front, top, and back formed as one piece, end plates, and removable bottom closure panel.
 - a. Height: Manufacturer's standard height required to enclose roller and shadeband when shade is fully open.

2.3 BLACKOUT /LOCKOUT WINDOW COVER AT CORRIDOR DISPLAY WINDOWS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide “Blackout EZ.com Lock Down Window Shades with Hook and Loop tape” or comparable product by one of the following:
 - 1. Or approved Equal.
- B. Install – Secure to surface with adhesive backed hook and loop tape, sizes per window. Installed per manufactures recommendation. Roll up tie provided.
- C. Material – Vinyl with weighted bottom bar.
- D. Fire protection- meets Federal and California flame resistant standards NFPA 701-2015, standard method of fire tests for flame propagation for textiles and films.
- E. Colors – Black/White, installed with black in the classroom/inside room.
- F. Care- clean with damp cloth.
- G. Sizes- provide window covers sizes per installation including custom sizes up to 72”. Overlapping required for windows over 72”.

2.4 SHADEBAND MATERIALS

- A. Shadeband Material Flame-Resistance Rating: Comply with NFPA 701. Testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
- B. Light-Filtering Fabric (Same Color Both Sides): Woven fabric, stain and fade resistant.
 - 1. Source: Roller-shade manufacturer.
 - 2. Type: Woven polyester and PVC-coated polyester.
 - 3. Weave: Basketweave.
 - 4. Color: As selected by Architect from manufacturer's full range.
 - 5. Basis-of-Design Product: Subject to compliance with requirements, provide the following Draper Inc. product or comparable product:
 - a. Light-Filtering Fabric (Same Color Both Sides) Openness Factor 3 percent: SheerWeave Series.
 - 1) Thickness: 0.037 inches.
 - 2) Weight: 20.7 oz./sq. yd.
 - 3) Locations: East-, west- and south-facing windows with clear view.

- C. Light-Blocking Fabric: Opaque fabric, stain and fade resistant.
1. Source: Roller-shade manufacturer.
 2. Type: Fiberglass textile with PVC film bonded to both sides.
 3. Thickness: 0.015 inches.
 4. Weight: 12 oz./sq. yd.
 5. Features: Washable.
 6. Color: As selected by Architect from manufacturer's full range.
 7. Basis-of-Design Product: Subject to compliance with requirements, provide Draper Inc.; SunBloc Series SB9000 or comparable product.
- D. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque labels with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.
1. Color: Opaque, bright yellow background with black letters.
 2. Size: 2 inches by 1 inch, 3/8" wide lines to form letters.
 3. Text: "RESCUE WINDOW", readable from room side of window.

2.5 ROLLER-SHADE FABRICATION

- A. Product Safety Standard: Fabricate roller shades to comply with WCMA A 100.1, including requirements for flexible, chain-loop devices; lead content of components; and warning labels.
- B. Unit Sizes: Fabricate units in sizes to fill window and other openings as follows, measured at 74 deg F:
1. Between (Inside) Jamb Installation: Width equal to jamb-to-jamb dimension of opening in which shade is installed less 1/4 inch per side or 1/2-inch total, plus or minus 1/8 inch. Length equal to head-to-sill dimension of opening in which shade is installed less 1/4 inch, plus or minus 1/8 inch.
 2. Outside of Jamb Installation: Width and length as indicated, with terminations between shades of end-to-end installations at centerlines of mullion or other defined vertical separations between openings.
- C. Shadeband Fabrication: Fabricate shadebands without battens or seams to extent possible.
- D. Rescue Window Labels: Provide and install on window shade in every space of pupil occupancy opaque labels with words "RESCUE WINDOW" Install labels on shades associated with rescue window coordinate with Architect for location.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 ROLLER-SHADE INSTALLATION

- A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions.
 - 1. Opaque Shadebands: Located so shadeband is not closer than 2 inches to interior face of glass. Allow clearances for window operation hardware.
 - 2. Hang shades at window to fit opening properly and operate smoothly and efficiently. Hang each shade perfectly level and with spring tension of roller properly adjusted. Locate tips of adjoining shades no further than 3/8 inch apart when two or more are mounted back-to-back.
 - 3. Install each shade on brackets securely fastened to ceiling or wall as shown on Drawings. Furnish and install new brackets and other hardware required for proper installation of shades.
- B. Prior to installation of roller-shade units, coordinate installation locations and method of installation with window manufacturer, do not secure roller-shade units to window frame.

3.3 ADJUSTING

- A. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.4 CLEANING AND PROTECTION

- A. Clean roller-shade surfaces after installation, according to manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that roller shades are without damage or deterioration at time of Substantial Completion.
- C. Replace damaged roller shades that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain motor-operated roller shades.

END OF SECTION 12 24 13

SECTION 12 32 13 - MANUFACTURED WOOD-VENEER-FACED CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes manufactured wood-veneer-faced cabinets of stock design.
- B. Section Includes
 - 1. Wood-veneer faced casework - overlay door design, including (but not limited to):
 - a. Wall, base, and tall cabinets
 - b. Tops for all base units.
 - c. Countertop assemblies
 - d. Solid Surface windowsills
 - e. ADA Safety Station
 - 2. Accessory items, including:
 - a. All filler panels, frame units, scribe strips, strips at walls, and similar items.
 - b. Cutouts for sinks, faucets, fittings, and other plumbing and electrical fixtures, electrical and mechanical runs and connections and similar items.
 - c. Epoxy resin countertops and sinks, drains and tail pieces
 - d. Materials and devices necessary to make solid connections to existing structure
- C. Products Furnished but not Installed Under this Section
 - 1. Mechanical components, electrical components, plumbing components, and similar items included with specified casework items; refer to "Sequencing and Scheduling".

1.3 DEFINITIONS

- A. Definitions in the AWT's, AWMAC's, and WT's "Architectural Woodwork Standards" apply to the work of this Section.
- B. MDF: Medium-density fiberboard.
- C. Hardwood Plywood: A panel product composed of layers or plies of veneer, or of veneers in combination with lumber core, hardboard core, MDF core, or particleboard core, joined with adhesive and faced both front and back with hardwood veneers.

1.4 COORDINATION

- A. Coordinate sizes and locations of framing, blocking, furring, reinforcements, and other related units of Work specified in other Sections to ensure that casework can be supported and installed as indicated.

1.5 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Casework.
 - 2. Hinges.
 - 3. Pulls.
 - 4. Door catches.
 - 5. Drawer slides.
 - 6. Label holders.
 - 7. Drawer and hinged door locks.
 - 8. Adjustable shelf supports.
 - 9. Wardrobe rod.
 - 10. Grilles.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Show fabrication details, including types and locations of hardware. Show installation details, including field joints and filler panels. Indicate manufacturer's catalog numbers for casework.
 - 1. Roughing Drawings: Submit roughing drawings, showing complete roughing dimensions for plumbing, ventilating and electric services and components to be installed in casework, including location of existing roughing and dimensions, where applicable.
 - 2. Groups/Assemblies: Submit shop drawings of groups or assemblies, including descriptions identifying units, parts, and accessories of each item and showing materials, dimensions, cabinet-cut details, and sink locations (where applicable).
 - 3. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.
 - 4. Color/Finishes: Shop drawings are not to include colors, wood finishes, stains, etc. All colors are to be selected by the Architect and issued to the contractor by an ASI during the construction phase.

C. Samples:

1. Casework Units: Without cost to Owner, submit samples, as requested, to demonstrate Contractor's ability to furnish required casework.
2. Color Selection: Submit actual samples of finishes, colors, and materials as required for color selection. Submit full range of manufacture colors, texture, and wood tones.

1.7 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Quality Standard Compliance Certificates: AWI Quality Certification Program certificates.
 1. Joint Tolerances 400C-T-1.
 2. Finishness Test 400C-T-2.
- C. Sample Warranty: For special warranty.
- D. Installer Experience Listing: Submit list of completed projects using products proposed for this Project, including owner's contact and telephone number for each project, demonstrating compliance with applicable "Qualifications" requirements specified below in "Quality Assurance" article.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish complete touchup kit for each type and finish of casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged casework finish.

1.9 QUALITY ASSURANCE

- A. Manufacturer: Minimum 5-years' experience in manufacture of casework and other items similar to those specified and minimum 5 completed casework installations of similar size and requirements to that specified.
- B. Installer: Minimum 5 completed casework installations of similar size and requirements to that specified.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver casework only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate casework have been completed in installation areas. If casework must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.
- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.11 FIELD CONDITIONS

- A. Environmental Limitations: Do not deliver or install casework 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. Maintain temperature and relative humidity during the remainder of the construction period in range recommended for Project location by the AWT's, "Architectural Woodwork Standards."
- B. Field Measurements: Prior to fabrication or ordering of any specified casework items, verify measurement at Site of actual space reserved for casework items; DO NOT take measurements from Contract Drawings. Give due consideration to architectural, structural, or mechanical discrepancies occurring during building construction. Make such discrepancies immediately known to Architect and obtain clarification of discrepancy in writing before proceeding with installation of affected casework items.
- C. Locate concealed framing, blocking, and reinforcements that support casework by field measurements before being enclosed and indicate measurements on Shop Drawings.

1.12 SEQUENCING AND SCHEDULING

- A. Coordinate the layout and installation of casework with all Prime Contractors. See Section 01 12 00 for each Contractor's coordination responsibilities.
- B. Refer to the casework model numbers for the plumbing and electrical fittings and fixtures that are shown to be part of the casework. Deliver these fittings and fixtures to the contractor assigned to their installation in Section 01 12 00. Obtain a signed receipt for their delivery.
- C. Provide all holes / cut outs in the casework for all Prime Contractors on the Project. Coordinate with the work on the E, P, & HVAC drawings, and division 22, 23, 26, 27, and 28.

1.13 MAINTENANCE

- A. Extra Materials: Furnish complete touchup kit for each type and color of wood laboratory casework provided. Include scratch fillers, stains, finishes, and other materials necessary to perform permanent repairs to damaged laboratory casework finish.

1.14 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of casework that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Delamination of components or other failures of glue bond.
 - b. Warping of components.
 - c. Failure of operating hardware.
 - d. Deterioration of finishes.

2. Contractor's Guarantee: Upon completion of installation of casework and after acceptance by Owner, furnish to Owner written statement accepting full responsibility for installation and guaranteeing adequacy and safety of attachment of all casework.
3. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- 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:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide "Millennium Series" by Diversified Casework or comparable product by one of the following:
 1. Kewaunee Scientific Corporation.
 2. Leonard Peterson Co., Inc.
- C. Source Limitations: Obtain wood-veneer-faced casework with tops, sinks, special equipment, and service fixtures from same casework supplier to establish single responsibility for all casework components.

2.2 CASEWORK, GENERAL

- A. Quality Standard: Unless otherwise indicated, comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards" for grades of casework indicated for construction, finishes, installation, and other requirements.
 1. Grade: Premium
 2. Provide labels and certificates from AWI certification program indicating that casework, including installation, complies with requirements of grades specified.
- B. Product Designations: Drawings indicate sizes, configurations, and finish materials of manufactured wood-veneer-faced casework by referencing designated manufacturer's catalog numbers. Other manufacturers' casework of similar sizes and door and drawer configurations, of same finish materials, and complying with the Specifications may be considered. See Section 01 60 00 "Product Requirements."
- C. Product Designations: Drawings indicate configurations of manufactured wood-veneer-faced casework by referencing designations of Casework Design Series numbering system in Appendix A of the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."

2.3 WOOD-VENEER-FACED CABINETS

- A. Design:
 1. Lipped overlay with radiused wood edges.

- B. Wood Species: White Maple.
- C. Face Veneer Cut: Grade AA Plain sliced.
- D. Veneer Matching:
 - 1. Provide veneers for each cabinet from a single flitch, book and running matched.
 - a. Provide continuous matching of adjacent drawer fronts within each cabinet.
- E. Grain Direction:
 - 1. Vertical on doors, horizontal on drawer fronts.
 - 2. Lengthwise on face frame members.
 - 3. Vertical on end panels.
 - 4. Side to side on bottoms and tops of units.
 - 5. Vertical on knee-space panels.
 - 6. Horizontal on aprons.
- F. Exposed Materials:
 - 1. Plywood:
 - a. Maple Plywood: White Maple, Grade AA, rotary cut, book matched, cross-banded, with solid hardwood core.
 - 1) 1/4 inch: Minimum 3-ply.
 - 2) 3/4 inch: Minimum 7-ply.
 - b. Other Hardwood Plywood: Sound grade; cross-banded, with solid hardwood core.
 - 1) 1/4 inch: Minimum 3-ply.
 - 2) 3/4 inch: Minimum 7-ply.
 - 2. Solid Wood: Clear hardwood lumber of species indicated and selected for grain and color compatible with exposed plywood.
- G. Semi exposed Materials:
 - 1. Solid Wood: Sound hardwood lumber, selected to eliminate appearance defects, of same species as exposed wood.
 - 2. Plywood: Hardwood plywood of same species as exposed wood. Provide backs of same species as faces.
 - 3. Provide solid wood or hardwood plywood for semi-exposed surfaces unless otherwise indicated.
 - 4. Hardboard: Use only for cabinet backs where exterior side of back is not exposed.
- H. Hardboard: Full tempered 2 sides, consisting of steam-exploded wood fibers, highly compressed into hard, dense 1/4-inch-thick homogeneous sheet using natural resins and other added binders; providing following physical properties:
 - 1. Modulus of Rupture: 5,000 PSI

2. Density:.....56 PCF
3. Internal Bond: 100.0 PSI

I. Particleboard: Industrial grade meeting or exceeding CS 236-66 and ASTM D1037 with following physical properties:

1. Density:.....47 PCF (+10 percent)
2. Interior Bond:..... 60 PSI
3. Modulus of Elasticity:.....400,000 PSI
4. Modulus of Rupture:.....2,400 PSI
5. Screw Holding Power - Face: 225 lbs.
6. Screw Holding Power - Edge:....200 lbs

2.4 MATERIALS

- A. Maximum Moisture Content for Lumber: 7 percent for hardwood and 12 percent for softwood.
- B. Hardwood Plywood: HPVA HP-1, particleboard core except where veneer core is indicated.
- C. Marine Grade Hardwood Plywood: typical for all countertop applications.
- D. Softwood Plywood: U.S. Department of Commerce (DOC) PS 1.
- E. Particleboard: ANSI A208.1, Grade M-2.
- F. MDF: ANSI A208.2, Grade 130.
- G. Hardboard: ANSI A135.4, Class 1 Tempered.
- H. Edge banding: Minimum 1/8-inch- thick, solid wood of same species as face veneer
 1. Select wood edge banding for grain and color compatible with face veneers.
 2. Colors: As selected by Architect from manufacturer's full range.
- I. Countertop Solid surface material: Provide countertops with the following front and backsplash style: 1/2-inch thick, solid surface material Splashes: 1/2-inch thick, solid surface material. Fabrication: Fabricate tops in one piece on marine grade plywood with shop-applied edges unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing. Solid Surface Material: Homogeneous solid sheets of filled plastic resin complying with ANSI SS1, Class A.
 1. Fabricate with loose splashes for field assembly.
 2. Adhesives: Adhesives shall not contain urea formaldehyde.
 3. 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. Hanex Solid Surfaces.
 - b. Corian

- c. LG Hi Macs
 - d. Formica Corporation.
 - e. Wilsonart International.
- 4. Colors and Patterns: As selected by Architect from manufacturer's full range.
- J. Epoxy Resin Countertop: Factory-molded modified epoxy-resin formulation with smooth, non-specular finish, edge as per details.
 - 1. Physical Properties:
 - a. Flexural Strength: Not less than 10,000 psi.
 - b. Modulus of Elasticity: Not less than 2,000,000 psi.
 - c. Hardness (Rockwell M): Not less than 100.
 - d. Water Absorption (24 Hours): Not more than 0.02 percent.
 - e. Heat Distortion Point: Not less than 260 deg F.
 - 2. Chemical Resistance: Epoxy-resin material has the following ratings when tested with indicated reagents according to NEMA LD 3, Test Procedure 3.4.5:
 - a. No Effect: Acetic acid (98 percent), acetone, ammonium hydroxide (28 percent), benzene, carbon tetrachloride, dimethyl formamide, ethyl acetate, ethyl alcohol, ethyl ether, methyl alcohol, nitric acid (70 percent), phenol, sulfuric acid (60 percent), and toluene.
 - b. Slight Effect: Chromic acid (60 percent) and sodium hydroxide (50 percent).
 - 3. Countertop Fabrication: Fabricate with factory cutouts for sinks and with butt joints assembled with epoxy adhesive and pre-fitted, concealed metal splines.
 - a. Countertop Configuration: Molded into solid, flat, min.1 inch thick,
 - 1) Drip groove
 - 2) Back splash
 - 3) Marine edge
 - 4) Rounded edges and corners- refer to details
 - b. Countertop Configuration: As indicated.
 - c. Countertop Construction: Uniform throughout full thickness.
 - 4. Color: Black, Gray or Beige As selected by Architect from manufacturer's full range.
- K. Solid Surface windowsills and aprons:
 - 1. Solid-Surfacing Material Thickness: 1/2-inch.
 - 2. Fabrication: Fabricate stools and aprons in one piece, unless otherwise indicated. Comply with solid-surface-material manufacturer's written instructions for adhesives, sealers, fabrication, and finishing

3. Adhesives: Adhesives shall not contain urea formaldehyde.
4. 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. Hanex Solid Surfaces
 - b. Corian
 - c. LG Hi Macs
 - d. Formica Corporation.
 - e. Wilsonart International.
5. Colors and Patterns: As selected by Architect from manufacturer's full range.

2.5 FABRICATION

A. Base Cabinet Construction:

1. Tops: Horizontal frame with pinned mortise and tenon joints; joined to cabinet side with 8-mm hardwood dowels on 32-mm centers. Includes 1-1/8-inch-thick x 1-3/4-inch-deep front rail with 3/4-inch-thick x 1-1/4-inch-deep side rails and 3/4-inch-thick x 1-3/4-inch-deep back rail.
2. Divider Under Drawers: 3/4-inch-thick x 2-1/4-inch-deep front cross rail, secured to cabinet sides with 8-mm hardwood dowels on 32-mm centers. On all-drawer cabinets where locks are indicated, hardboard panel fitted in intermediate horizontal frame and placed between drawers to prevent access to other drawers.
3. Bottoms: 3/4-inch thick 7-ply hardwood plywood, let into 1-1/8-inch-thick x 1-3/4-inch-deep bottom rail and jointed to cabinet sides with 8-mm hardwood dowels on 32-mm centers.
4. Sub-Base: Separate and continuous (no cabinet body sides-to-floor), water resistant exterior grade plywood with concealed fastening to cabinet bottom. Ladder-type construction of front, back and intermediates to form a secure and level platform to which cabinets attach. Provide on surface of subbase, at exposed sides and ends, material to match cabinet material to ensure continuity where rubber base height may not cover due to floor shim. Typical
5. Tops, Dividers Under Drawers, and Bottoms: Securely glued and screwed under pressure to sides at assembly to ensure joint integrity and squareness.
6. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer for exposed surfaces and unselected but sound veneers for unexposed surfaces. Includes 3/8-inch-thick hardwood nosing applied to exposed front edge of cabinet side. Where adjustable shelves required by specified manufacturer's catalog numbers, sides bored with 5 mm holes.
7. Backs: 1/4-inch-thick tempered hardboard secured to cabinet top and bottom and dadoed into cabinet sides. Backs recessed 5/16-inch to permit accurate scribing to wall.

8. Removable Backs: Where indicated by specified manufacturer's catalog numbers, backs retained in vertical cleats secured to cabinet sides to provide tight joints and convenient access to plumbing.
9. Shelves: 1-inch thick 9-ply hardwood plywood with 3/8-inch solid lumber edge band front edges. Additional support provided at rear of cabinets 36 inches and wider.
10. Toe Space: 4-inches high x 3-1/4-inches deep with 3/4-inch-thick x 4-inch-high toe board, joined between cabinet sides with 8 mm hardwood dowels.
11. Drawers - Semi-Flush Radius Lipped- Oak:
 - a. Drawer Face: 3/4-inch-thick solid lumber core, faced with selected hardwood veneer.
 - b. Sides and Back: 1/2-inch-thick solid hardwood; dovetailed at front and rear.
 - c. Bottoms: 1/4-inch-thick tempered hardboard fitted and secured into grooves in drawer face, sides and back.
 - d. Interior Finish: Sealed and varnished to resist absorption.
 - e. Slides: Side mount, epoxy-coated drawer slides, providing at least 100 lbs load capacity and incorporating positive stops. Provide progressive type slide with minimum 100 lbs load capacity for file drawers.

B. Wall Cabinet Construction:

1. Tops and Bottoms: 3/4-inch thick 7-ply hardwood plywood, let into 1-1/8-inch-thick x 1-3/4-inch-deep top and bottom rail and joined to cabinet sides with 8 mm hardwood dowels on 32 mm centers. Securely glued and screwed under pressure at sides to assembly to ensure joint integrity and unit squareness.
2. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer on exposed surfaces and unselected but sound veneer on unexposed surfaces. 3/8-inch-thick hardwood nosing applied to exposed front edge of cabinet side. Where adjustable shelves required, 5 mm holes bored in sides on 32 mm centers.
3. Backs: 1/4-inch-thick tempered hardboard secured to cabinet top and bottom, dadoed into cabinet sides, and recessed 5/16-inch to permit accurate scribing to wall.
4. Shelves: 1-inch thick 9-ply hardwood with 3/8-inch-thick hardwood nosing on front edge. Shelves in 36-inch and wider cabinets include additional support at rear.

C. Cases:

1. Tops and Bottoms: 3/4-inch thick 7-ply hardwood plywood let into 1-1/8-inch-thick x 1-3/4-inch-deep top and bottom rail and joined to cabinet sides with 8 mm hardwood dowels on 32 mm centers. Tops and bottoms securely glued and screwed under pressure to sides at assembly to ensure joint integrity and unit squareness.

2. Sides: 3/4-inch thick 7-ply hardwood plywood, faced with selected hardwood veneer on exposed surfaces and unselected but sound veneers on unexposed surfaces. 3/8-inch-thick hardwood nosing applied to front edge of cabinet side. When adjustable shelves required, 5 mm holes bored in sides.
3. Backs: 1/4-inch tempered hardboard secured to cabinet top and bottom, dadoed into cabinet sides, and recessed 5/16-inch to permit accurate scribing to wall.
4. Shelves: 3/4-inch thick 7-ply hardwood with 3/8-inch-thick hardwood nosing on front edge. Shelves in 36-inch and wider cabinets include additional support at rear.
5. Toe Space: 4-inches high x 3-1/4-inches deep with 3/4-inch-thick x 4-inch-high toe board, joined between cabinet sides with 8 mm hardwood dowels.

D. Doors

1. Semi-Flush Radius Lipped – Maple:
 - a. Base and Wall Cabinets: 3/4-inch-thick solid core, banded on all edges and faced with selected hardwood veneer.
 - b. Tall Cases: 1-1/8-inch-thick solid lumber core, banded on all edges and faced with selected hardwood veneer.
2. Hinged Glazed Doors: 1-1/8-inch-thick x 2-3/4-inch-wide heavy selected hardwood frame fitted with 1/4-inch tempered glass and equipped with same carriers specified for solid case doors above.
 - a. Wall and Base Cabinets: 3/4-inch-thick x 2-3/4-inch-wide selected hardwood frame fitted and equipped as specified for “Hinged Glazed Doors” above.

- E. Filler Strips: Provide as needed to close spaces between cabinets and walls, ceilings, and indicated equipment. Fabricate from same material and with same finish as cabinets.

2.6 FINISH

- A. Wood Finishes: Varnish providing tough, hard properties to withstand most severe conditions and staining agents imparting clean, translucent appearance to wood substrate and enhance and improve natural graining in face without suggestion of masking or hiding. Finished film provides mellow, smooth texture.
1. Surface Preparation: All surfaces thoroughly sanded with fine abrasive not coarser than 3/0 Garnet finishing paper, achieving absolute cleanliness before finishing coat application. All wood flour and abrasive particles removed with dry compressed air and all areas wiped with tack rag.
 2. Sealing: Synthetic resin-based sealer applied to all surfaces of drawer, cabinet doors, exposed surface, and other small sections where complete sealing of edges necessary to prevent moisture absorption. Remainder of cabinet sprayed with sealer after application to specific surfaces. Sealer air-dried within 20 minutes to permit light scuff sanding with 5/0 Garnet finishing paper and subsequently thoroughly dusted.

3. Stain: Pigmented stain consisting of non-fading and non-bleeding colors, ground in suitable vehicle, permitting blending in proportions required to produce color selected by Architect from manufacturer's full range of standard and custom colors.
4. Topcoat: Varnish consisting of moisture of chlorinated polymers and co-polymers suitably compounded with oil modified alkyd resin and other resinous plasticizers in solution of aromatic and oxygenated solvents. Produces cured film gloss with range of 40-50 measured by 60-degree gloss meter. Rubbed effect accomplished by inorganic flattening agent and acid catalyst added prior to spraying to convert film to cured state. Thorough sanding of previous coating provided to promote inter-coat adhesion with careful dusting to remove all powdered finish and abrasive prior to final coating.

5. Chemical Resistance Properties –Oak Wood Veneer Casework

a. Spot Test to Evaporation

- 1) Boiling Water.....No effect
- 2) Ethyl Alcohol.....No effect
- 3) Isopropyl Alcohol.....No effect
- 4) Methyl Alcohol.....No Effect
- 5) Xylol.....No effect
- 6) Toluol.....No effect
- 7) Naptha.....No effect
- 8) Gasoline.....No effect
- 9) Methyl Ethyl Ketone.....No effect
- 10) Acetone.....No effect
- 11) Chloroform.....No effect
- 12) Formaldehyde.....No effect
- 13) Ink.....No effect

b. Spot Test for One Hour

- 1) 25 percent Sulfuric Acid.....No effect
- 2) 70 percent Sulfuric Acid.....Film destroyed
- 3) 20 percent Hydrochloric Acid (5 min.).....No effect
- 4) 37 percent Hydrochloric Acid.....Very slight ring & stain
- 5) 50 percent Nitric Acid.....Film destroyed
- 6) 10 percent Sodium Hydroxide.....No effect
- 7) 29 percent Ammonia.....No effect
- 8) Iodine.....Slight stain
- 9) Lipstick.....No effect
- 10) Crayon.....No effect
- 11) Catsup.....No effect
- 12) Butter.....No effect
- 13) Oleo.....No effect
- 14) Mustard.....No effect
- 15) Grape Juice.....No effect
- 16) Coke or Pepsi Cola.....No effect
- 17) Vinegar.....No effect
- 18) Milk.....No effect

- c. Adhesion and Toughness: Attempts to separate various finish layers from each other and from wood with razor blade or sharp knife are extremely difficult or results in no separation of various layers.

2.7 CASEWORK HARDWARE AND ACCESSORIES

- A. Hardware, General: Unless otherwise indicated, provide manufacturer's standard satin-finish, commercial-quality, heavy-duty hardware.
 - 1. Use threaded metal or plastic inserts with machine screws for fastening to particleboard, except where hardware is through bolted from back side.
- B. Butt Hinges: Wrap-around type, 5-knuckle pin, heavy-duty institutional type with rounded ends, finished in either brushed chrome or black as directed by Architect and concealing hinge screws when door closed.
 - 1. Lipped Construction: 2-1/2-inches high x 0.072-inch thick.
 - 2. Offset kitchen cabinet type, plain butt hinges or hinges with removable pins not acceptable.
 - 3. 2 hinges provided on doors less than 44 inches high; 3 hinges provided on doors 44 inches high and higher.
- C. Pulls: Solid stainless-steel wire pulls, fastened from back with two screws. Provide two pulls for drawers more than 24 inches wide.
- D. Door Catches: Zinc-plated spring catch or dual, self-aligning, permanent magnet catches. Provide two catches on doors more than 48 inches high.
- E. Drawer Slides: BHMA A156.9, Type B05091.
 - 1. Standard Duty (Grade 1, Grade 2, and Grade 3): Side mounted and extending under the bottom edge of drawer; full partial-extension type; zinc-plated epoxy-coated steel with polymer rollers.
 - 2. Heavy Duty (Grade 1HD-100 and Grade 1HD-200): Side mounted; full-overtravel-extension type; zinc-plated, steel ball-bearing slides.
 - 3. Box Drawer Slides: Grade 1HD-100, for drawers not more than 6 inches high and 24 inches wide.
 - 4. File Drawer Slides: Grade 1HD-100, for drawers more than 6 inches high or 24 inches wide.
- F. Drawer and Hinged Door Locks: Cylindrical (cam) type, five-pin tumbler, brass with chrome-plated finish, and complying with BHMA A156.11, Grade 1. Each room is to be keyed and master keyed.
 - 1. Provide a minimum of two keys per lock and six master keys.
 - 2. Provide locks on all doors and drawers.

- G. Adjustable Shelf Supports: Two-pin-locking plastic shelf rests complying with BHMA A156.9, Type B04013.
- H. Adjustable Wall Shelf Supports: Surface-type steel standards and steel shelf brackets, with epoxy powder-coated finish, complying with BHMA A156.9, Types B04102 and B04112.
- I. Countertop Support: type and style as called out on drawings.
- J. Grilles: Continuous brushed aluminum, finished countertop grille and toe-kick grille for air filtration at fin tube locations and as shown on Drawings similar to “Model #CT-PP-3 (c’top)/#CT-PP-0 (toe)Linear Diffuser” by Titus.
- K. ADA Safety Station WM-D1001: in addition, items noted below:
 - 1. Provide with ADA base unit.
 - 2. Emergency eyewash, 4 spray heads, lever handle.
 - 3. 1 Emergency Shower, 11” shower head
 - 4. 1 stainless steel sink, 11”
 - 5. Pull rod
 - 6. Epoxy resin countertop.
 - 7. Provide 1 Drench Shower tester sim. to Bradley S19-330ST

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor’s acceptance of substrates and conditions.

3.2 CASEWORK INSTALLATION

- A. Grade: Install cabinets to comply with same grade as item to be installed.
- B. Install casework level, plumb, and true; shim as required, using concealed shims. Where casework abuts other finished work, apply filler strips and scribe for accurate fit, with fasteners concealed where practical.
- C. Utility-Space Framing: Secure to floor with two fasteners at each frame. Fasten to partition framing, wood blocking, or metal reinforcements in partitions and to base cabinets.
- D. Base Cabinets: Adjust top rails and subtops within 1/16 inch of a single plane. Fasten cabinets to utility-space framing, partition framing, wood blocking, or reinforcements in partitions with fasteners spaced not more than 24 inches o.c. Fasten adjacent cabinets together with joints flush, tight, and uniform. Align similar adjoining doors and drawers to a tolerance of 1/16 inch.

1. Where base cabinets are installed away from walls, fasten to floor at toe space at not more than 24 inches o.c. and at sides of cabinets with not less than 2 fasteners per side.
 - E. Wall Cabinets: Adjust fronts and bottoms within 1/16 inch of a single plane. Fasten to hanging strips, masonry, partition framing, blocking, or reinforcements in partitions. Fasten each cabinet through back, near top, at not less than 24 inches o.c. Align similar adjoining doors to a tolerance of 1/16 inch.
 - F. Fasten cabinets to adjacent cabinets and to masonry, framing, wood blocking, or reinforcements in walls and partitions to comply with the AWI's, AWMAC's, and WI's "Architectural Woodwork Standards."
 - G. Install hardware uniformly and precisely. Set hinges snug and flat in mortises unless otherwise indicated. Adjust and align hardware so moving parts operate freely and contact points meet accurately. Allow for final adjustment after installation.
 - H. Adjust casework and hardware so doors and drawers operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.
- 3.3 CLEANING
- A. Repair or remove and replace defective work as directed on completion of installation.
 - B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
 - C. Protect countertop surfaces during construction with 6-mil plastic or other suitable water-resistant covering. Tape to underside of countertop at minimum of 48 inches o.c.

END OF SECTION 12 32 13

SECTION 12 56 51 - LIBRARY FURNITURE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood-case library shelving.

1.3 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

1.4 SUBMITTALS, GENERAL

- A. General: Submit all action submittals (except Samples for Verification) and informational submittals required by this Section concurrently.

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 for library furniture and accessories.
 - 1. Wood-case shelving.
- B. Shop Drawings:
 - 1. Include plans, elevations, sections, and details.
 - 2. Show clear-aisle widths from face of units.
 - 3. Detail fabrication and installation of library shelving systems including methods of anchoring to building structure at locations recommended by manufacturer and as required for seismic restraint.
- C. Samples for Initial Selection: For units with factory-applied finishes, 6 inches in size.

1.6 INFORMATIONAL SUBMITTALS

- A. Seismic Design Calculations: For seismic design of library shelving systems including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- B. Qualification Data: For Installer.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For library stack systems to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Source Limitations: Obtain library furniture through one source from a single manufacturer, unless noted otherwise.
- C. Fire-Test-Response Characteristics of Upholstered Chairs:
 - 1. Fabric: Class 1 according to U.S. Department of Commerce (DOC) CS 191 and 16 CFR 1610.61, tested according to California Technical Bulletin 117.
 - 2. Padding: Comply with California Technical Bulletin 117.
 - 3. Full-Scale Fire Test: Comply with California Technical Bulletin 133.
- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of library furniture and are based on the specific system indicated. Refer to Division 01 Section "Product Requirements."
 - 1. Do not modify requirements, as judged solely by Architect, except with Architect's approval. If modifications are proposed, submit comprehensive explanatory data to Architect for review.
- E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and 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 such deviations are specifically approved by Architect in writing.
 - 2. Provide mock-ups for the following:
 - a. One full-size wood case library shelving.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver library furniture only after painting, utility roughing-in, and similar operations that could damage, soil, or deteriorate library furniture have been completed in installation areas. If library furniture must be stored in other than installation areas, store only in areas where environmental conditions meet requirements specified in "Project Conditions" Article.

- B. Keep finished surfaces covered with polyethylene film or other protective covering during handling and installation.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install library furniture until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at occupancy levels during the remainder of the construction period.
- B. Field Measurements: Verify actual dimensions of construction contiguous with library furniture by field measurements before fabrication. Indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Library shelving systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

2.2 WOOD-CASE SHELVING

- A. Wood-Case Library Shelving: Shelving designed for library use and consisting of base frame and full end, top, and back panels, with end panels made to receive pins to support adjustable shelves.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Worden Company; Pin-Fast Shelving or comparable product.
- B. Wood Case Library Shelving: Shelving designed for library use and consisting of full end, top, and back panels, with end panels made to receive pins to support adjustable shelves.
 - 1. Configuration: Starter/adder units.
- C. Vertical Panels: Panels consisting of lumber-core veneer panels, 1-inch-thick, with solid-wood banding. Provide two rows of 8 mm holes at 32 mm intervals for shelf support pins on one side of end panels and both sides of intermediate panels.
- D. Base Frames: Lumber-core veneer panel external toe kick; particleboard with thermally fused melamine internal and back toe kicks; 4 inches high; designed to support bottom shelf and fabricated to attach and tie together vertical panels.
- E. Wood Shelves: Panels consisting of solid hardwood boards glued together, 3/4-inch-thick, with 2-inch solid-wood nosing strip, and grooved on underside to rest securely on supporting pins.
- F. Cornice Tops: 3/4-inch-thick, particleboard-core veneer panel banded with solid hardwood fasciae on one side for single-faced units and on two sides for double-faced units, fabricated to attach and tie together vertical panels.

- G. Back and Divider Panels: Veneer-core, veneer-faced panels, 1/4-inch-thick.
- H. Bookstack Units:
1. Type: Single and Double-faced units.
 2. Width: 36 inches.
 3. Height and Number of Shelves:
 - a. 42 inches; two adjustable shelves; one base shelf.
 - b. 63 inches; four adjustable shelves; one base shelf.
 - c. 82 inches; five adjustable shelves; one base shelf.
 4. Shelf Depth: 14 inches nominal.
 5. Shelf Style:
 - a. Flat, unless noted otherwise.
 - b. Adjustable divider, where indicated.
 - 1) Notch shelf bottom for dividers.
- I. Bookstack Units- Movable: each 3' section to have locking casters.
1. Type: Double faced units- 24" deep, movable.
 2. Width: 36 inches.
 3. Height and Number of Shelves:
 - a. 42 inches; three adjustable shelves; one base shelf.
 - b. 36 inches; three adjustable shelves; one base shelf.
 4. Shelf Depth: 12 inches nominal.
 5. Shelf Style:
 - a. Flat, unless noted otherwise.
- J. Accessories:
1. Adjustable Shelf Dividers: One-piece shelf partitions, with hooks or tabs to fit in slots in divider shelves.
 - a. Provide three per adjustable divider shelf.

2.3 STRUCTURAL SUPPORT

- A. Wall Anchorage: Manufacturer's standard, galvanized steel anchor designed to secure shelving to adjacent wall. Provide one per shelving unit for each shelving unit adjacent to a wall.

2.4 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.

2.5 WOOD FINISHES

- A. Preparation: Sand wood units after assembling for uniform smoothness at least equivalent to that produced by 220-grit sanding and without machine marks, cross sanding, or other surface blemishes.
- B. Staining: Remove fibers and dust and apply wash-coat sealer and stain to exposed and semi exposed surfaces as required to provide uniform color and to match approved samples.
- C. Finishing: Apply manufacturer's standard, baked, clear finish consisting of a sealer and a conversion varnish or nitrocellulose lacquer topcoat. Sand and wipe clean between applications of sealer and topcoat.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances, location of framing and reinforcements, and other conditions affecting performance of library stack systems.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. Beginning installation constitutes Contractor's acceptance of substrates and conditions.

3.2 PREPARATION

- A. Vacuum finished floor and wet mop resilient flooring over which shelving is to be installed.
- B. Before installing wood-case shelving, condition materials to average prevailing humidity in installation areas for a minimum of 48 hours unless longer conditioning is recommended by manufacturer.

3.3 INSTALLATION, WOOD CASE LIBRARY SHELVING

- A. Install library shelving systems at locations indicated on Drawings and according to manufacturer's written instructions.
- B. Level units with integral adjustable leveling devices to a tolerance of 1/8 inch in 96 inches for level and plumb.
- C. Install using anchorage or bracing as recommended by manufacturer and as required for stability.
- D. Install the following with concealed fasteners:
 - 1. End panels.
 - 2. Canopy tops.
- E. Install shelves at equal spacing in each unit.

3.4 CLEANING AND PROTECTING

- A. Repair or remove and replace defective work as directed on completion of installation.
- B. Clean finished surfaces, touch up as required, and remove or refinish damaged or soiled areas to match original factory finish, as approved by Architect.
- C. Protect installed products from damage during remainder of the construction period.

END OF SECTION 12 56 51

SECTION 12 61 00 - FIXED AUDIENCE SEATING**PART 1 - GENERAL****1.1 SUMMARY**

- A. Seating to be provided by Owner.

1.2 COORDINATION

- A. Seating Contractor to provide coordination with other trades.

1.3 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.

1.4 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For fixed audience seating to include in operation and maintenance manuals.
 - 1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:
 - a. Maintenance of self-rising seat mechanisms and other operating components.
 - b. Adjustment of self-rising seat mechanisms to align seats.
 - c. Maintenance of electrical components, devices, and accessories.
 - d. Methods for maintaining upholstery fabric.
 - e. Precautions for cleaning materials and methods that could be detrimental to seating finishes and performance.

END OF SECTION 12 61 00

SECTION 12 93 00 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:

- 1. Benches
 - 2. Planters.

- B. Related Requirements:

- 1. Division 03 Section "Cast-in-Place Concrete" for installing pipe sleeves, cast installing anchor bolts and/or concrete footings.
 - 2. Section 31 20 00 "Earth Moving" for excavation for installing concrete footings.

1.3 ACTION SUBMITTALS

- A. Product Data:

- 1. Benches.
 - 2. Planters

- B. Shop Drawings: For site furnishings. Include elevations, sections, details and attachments to other work.

- C. Samples: For each exposed product and for each color and texture specified.

1.4 QUALITY ASSURANCE

- A. Delivery, Storage and Handling: Deliver materials to site in manufacturer's original unopened containers and packaging. Store materials in clean, dry area in accordance with manufacturer's instructions. Protect materials and finish during handling and installation to prevent damage.

1.5 WARRANTY

- A. Warranty Requirements:

- 1. Product to be free from product and workmanship defects including surface bubbling, cracking and rusting for a period of three (3) years from the date of substantial completion of site furnishings.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For site furnishings to include in maintenance manuals.

PART 2 - PRODUCTS

2.1 STEEL BENCH – WITH BACK

- A. Manufacturer:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Model #CR-138 Classic Series Steel Bench with Back by Victor Stanley Victor Stanley, Inc. or comparable product by one of the following:
 - a. DuMor Inc. Model #58.
 - b. Maglin Site Furniture Inc. Model MLB300MH.
 - c. Landscape Forms. Scarborough

- B. Frame:

- 1. Material: Ductile iron.
- 2. Finish: Powdercoating.
 - a. Color: Chosen by Architect from Manufacturer's standard colors.

- C. Seat and Back:

- 1. Material: 1/4 x 1-1/2 inch flat steel bars and 1-5/16 inch tubular steel.
 - a. Finish: Corrosion protection with electrostatically applied 8-10 mil powdercoating.
 - b. Color: Chosen by Architect from Manufacturer's standard colors.
- 2. Seat Height: 17.25 inches.
- 3. Seat Surface Shape: Contoured.
- 4. Overall Height: 31 inches.
- 5. Overall Length: 72 inches.
- 6. Overall Depth: 23 inches.
- 7. Arms: Two, one at each end.
 - a. Arm Material: Match frame.
- 8. Mounting: Surface mounting.
- 9. Weight: 160 lbs.

2.2 PLANTER

A. Manufacturer:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Landscape Forms (www.landscapeforms.com) Model “Sorella” Planter or comparable product.

B. Styles:

1. Style A: Square 45 inch by 45 inch; 30” high; Capacity 211 gallons.
2. Style B: Rectangular 45 inch by 15 inch; 18” high; Capacity 62 gallons.

C. Side Panels

1. Materials: Carbon steel ASTM A 1011 hot rolled pickled and oiled commercial steel type B, 14 gauge formed. Seams are welded.

D. Corner Glides and Interior Base:

1. Materials:
 - a. Compression-molded recycled plastic attached to metal panels with black carbon steel ¼-10 pan head torx drive screws; with watertight sealing gasket.

E. Mounting: Freestanding.

F. Drain Holes: No drain holes.

G. Finish:

1. Primer: Rust inhibitor on ferrous supports.
2. Topcoat: Thermosetting TGIC polyester powdercoating.
3. Testing Requirements:
 - a. UV resistance, color and gloss: ASTM G 155, Cycle 7: Delta E less than 2 at 2.09 mils and less than 20 percent loss.
 - b. Gloss consistency, Gardner 60 degrees, ASTM D 523: Plus or minus 5 percent from standard.
 - c. Cross-hatch adhesion: ASTM D 3359, Method B: 100 percent pass.
 - d. Flexibility test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 - e. Impact test: ASTM D 2794: 60 inch-pounds at 2.5 mils.
 - f. Corrosion resistance: 1500-hour test, ASTM B 117: Max. undercutting 1 mm.
4. Color: Chosen by Architect from Manufacturer’s standard colors.

H. Assembly: Shop assembled by manufacturer.

2.3 GENERAL FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Preservative-Treated Wood Components: Complete fabrication of treated items before treatment if possible. If cut after treatment, apply field treatment complying with AWPAC M4 to cut surfaces.
- E. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- F. Factory Assembly: Assemble components in the factory to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.4 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 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, 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 installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

- C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.
- D. Core drilling in concrete for installation of site furnishings is not allowed.
- E. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
- F. Posts Set into Voids in Concrete: Form holes for installing posts in concrete to depth recommended in writing by manufacturer of site furnishings and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.
- G. Pipe Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.

3.3 ADJUSTING, CLEANING AND PROTECTION

- A. Remove and replace damaged components. If approved by Architect, repair minor damages to finish in accordance with manufacturer's installation instructions
- B. Clean site furnishings promptly after installation in accordance with manufacturer's instructions. Do not use materials or methods that could damage finish.
- C. Protect site furnishings until approved by Owner as substantially complete.

END OF SECTION 12 93 00